NORTH CAROLINA DIVISION OF AIR QUALITY

Air Permit Review

Permit Issue Date:

Region: Mooresville Regional Office
County: Cleveland
NC Facility ID: 2300153
Inspector's Name: Joseph Foutz
Date of Last Inspection: 06/24/2014
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): PPG Industries Fiber Glass Products Inc

Facility Address:
PPG Industries Fiber Glass Products Inc
940 Washburn Switch Road
Shelby, NC 28150

SIC: 3229 / Pressed And Blown Glass, Nec
NAICS: 327212 / Other Pressed and Blown Glass and Glassware Manufacturing

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP:
NSPS:
NESHAP:
PSD:
PSD Avoidance:
NC Toxics:
112(r):
Other:

Contact Data

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Application Data

Application Number: 2300153.09A
2300153.15A
Date Received: 01/26/2009
Application Type: Renewal / Sig. modification
Application Schedule: TV-Renewal, Sig. modification
Existing Permit Data
Existing Permit Number: 01958/T61
Existing Permit Issue Date: 05/12/2015
Existing Permit Expiration Date: 04/30/2020

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2013	53.82	119.52	97.25	60.92	124.11	10.42	8.75 [Methanol (methyl alcohol)]
2012	42.25	116.13	85.75	57.64	118.26	11.29	9.78 [Methanol (methyl alcohol)]
2011	32.11	110.28	107.92	54.26	141.89	28.40	26.92 [Methanol (methyl alcohol)]
2010	24.57	84.56	36.90	48.42	137.18	5.14	3.96 [Methanol (methyl alcohol)]
2009	19.42	72.18	31.31	35.63	95.12	7.32	6.21 [Methanol (methyl alcohol)]

Review Engineer: Joseph Voelker

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 01958/T62
Permit Issue Date: TBD
Permit Expiration Date: TBD

I. Purpose of Application

PPG Industries Fiber Glass Products Inc. (PPG) owns and operates a fiber glass production facility in Shelby, NC.

This permitting action is a renewal of an existing Title V permit pursuant to 2Q .0513. The renewal application was received on **January 26, 2009**, or at least nine months prior to the original expiration date of **October 31, 2009**.

As can be seen in the chronology below, the permit has been modified many times since the receipt of the renewal application and the actual processing of the application. As a result, many of the requested and/or required changes in the original renewal application have been addressed already in these permit modifications. Because of the nature of many of these modifications, a complete regulatory and permit condition review was conducted at the time of their incorporation.

The permitting history of this facility since the last permit renewal is presented in Section II chronology and includes a brief description of the nature of each modification. Additionally throughout the review, reference will be made to the specific permitting actions as necessary.

II. Chronology

The following is the chronology of all permitting actions since last permit renewal, which in fact was the initial Title V permit.

Date	Permit No.	App No.	App type	Description
Sept. 22, 2015	Being addressed in current action	15A	Significant	In March of 2014, PPG submitted an air permit application (no. 2300153.14A) for proposed modifications to Furnace No. 526. Permit T60 was subsequently issued on July 1, 2014. Condition 2.1.F.5.c of that permit required PPG to conduct stack testing of the furnace to confirm the accuracy of the emission estimates used in the application. The required stack testing was performed on January 28, 2015. The results of the stack testing indicated that emissions of Nitrogen Oxides (NOx) were greater than the emissions used in the application. The tested NOx rate was determined to be 2.24 lb NOx/ton of glass produced versus the emissions estimate of 1.80 lb NOx/ton that was used in the application. Pursuant to the permit, PPG is therefore required to resubmit an application to demonstrate compliance with the Prevention of Significant Deterioration (PSD) requirements of 15A NCAC 2D.0530. See 2D .0530(u) discussion for furnace 526 in Section III below.
May 12, 2015	T61	14C	Significant	As stated in the application cover letter: The facility operates under a Permit No. 01958T60, issued on July 1, 2014. This permit was issued to allow modification to Furnace No. 526. The modification to this furnace was allowed as a 15A NCAC 2Q .0501(c)(2) modification under Title V. As a 2Q .0501(c)(2) modification, PPG must file an amended Title V permit application within one year from the date of beginning operation of the source. PPG recently began operation of this furnace. This application fulfills the 2Q .0501 (c)(2) requirement. In addition, on September 24, 2014, the Permittee submitted a "502(b)(10)" notification to for the modification of boiler (ESB83B) with new burners resulting in a lower heat input rate. A regulatory review will be provided for this change and the permit updated accordingly.
July 1, 2014	T60	14A	Sign-501(c) (2)	PPG proposing to make modifications to Furnace No. 526 that involve the melter and forehearths. PPG is also making modifications to unpermitted activities and insignificant activities. See Section III for full discussion. It will be shown that projected actual emissions will be used to avoid PSD review. The application will be processed as a significant modification via the two step process pursuant to 15A NCAC 2Q .0504.

Date	Permit No.	App No.	App type	Description
March 28, 2013	T59	12G	Minor	PPG plans to: • replace the bag type dust collectors on three batch silos (silo nos. 9, 14, and 19) with cartridge type collectors. • add an insignificant activity [exempt from permitting per 15A NCAC 2Q.0503(8)] located at the Collet Test Building. PPG has a 55 gallon parts cleaner and a 55 gallon acid dip tank that are used to clean aluminum collet parts.
Nov. 08, 2012	T58	12F	Minor	PPG plans to: • add a sixth Remote Wet Cut (RWC) line with a glass processing capacity of approximately 31 million lbs/yr (3,500 lb/hr). • replace the natural gas fired dryers (ESWC367-369) and scrubbers (EPWC367- 369) on three existing RWC lines 1-3. • replace a failed emergency diesel water supply pump engine for Furnace 526 (ID No. ESDP93) • remove the lint scrubbers on the RWC lines 1-3 (CDWC367a-369a). The capacity of the dryers will decrease from the current permitted capacity of 5,100 lb/hr to 3,500 lb/hr, similar to the proposed new line. However, the rated heat input capacity of the dryers will increase from 2.5 to 3.5 MMBtu/hr. • add an insignificant activity to the permit • replace a control device on an insignificant activity
July 31, 2012	T57	12C	Minor	PPG is requesting: 1. To construct two new 1,800 lb/hr capacity electric fiber glass drying oven (ID No. ESD3 and ESD4).
March 22, 2012	T56	12A	Minor	PPG is requesting to add a new 20 Horsepower (HP) natural gas-fired boiler.
Dec. 21, 2011	T55	11D	Minor	PPG is requesting to: 1. modify furnace 524 to result in an increase in the maximum hourly capacity of the furnace from 16,200 to 18,600 lb/hr; and 2. vent an existing bagfilter to the atmosphere. .
July 15, 2011	T54	11A	502(b) (10)	PPG is requesting to add another (fifth) remote wet cut line (RWC) with associated packing and dust collection equipment.

Date	Permit No.	App No.	App type	Description
May 26, 2011	T53	11B	Minor	PPG is requesting: 1. To remove an existing natural gas fired drying oven (ID No. ES16) 2. To increase the permitted capacity of an existing electric oven (ESD1) from 1,200 lb/hr to 1,800 lb/hr. No physical modifications are necessary to achieve this higher capacity. 3. To construct a new 1,800 lb/hr capacity electric fiber glass drying oven (ID No. ESD2).
Nov. 4, 2010	T52	10C	Minor	PPG is requesting: 1. to vent three dust collectors in the raw material batch house to the outdoors. They currently vent indoors. Note that these collectors are identical in service to the dust collector addressed in Application 10A which resulted in the issuance of permit T51 on 09/28/2010. 2. to replace two existing storage bin bag filters installed on storage bins (ID Nos. EPDC100 and EPDC 101) with cartridge type dust collectors.
Sept. 28, 2010	T51	10B	Minor	PPG is requesting: 1. to add a another (fourth) remote wet cut line (RWC) with associated packing and dust collection equipment. 2. to vent a dust collector in the raw material batch house to the outdoors. It currently vents indoors. 3. to correct the regulatory applicability of the fiber glass drying ovens. To date the devices have been characterized as direct fired ovens, whereas they should be considered indirect fired ovens. 4. To remove a number of sources that are no longer in operation
April 28, 2010	T50	09B	Significant	Application No. 2300153.09B, received September 17, 2009, is a Part 2 MACT "Hammer" application for two natural gas/No. 2 fuel oil-fired boilers (25.1 million Btu per hour (MMBtu/hr), nominal heat input rate each) and for twenty-six natural gas-fired process heaters rated at various heat inputs ranging from 0.87 to 2.35 MMBtu/hr

Date	Permit No.	App No.	App type	Description
Dec. 17, 2008	T49	08B and 08D	Minor	PPG submitted application 2300153.08B, received on October 15, 2008, to remove the annual testing requirement demonstrating compliance with 15A NCAC 2D .0515 for furnace 526 in the Title V permit and replace it with the standard testing required for the other furnaces using EFB technology at the site. PPG submitted "Notice of Intent to Construct" application 2300153.08C, received on November 12, 2008, requesting permission to construct seven fiber glass drying ovens prior to receipt of an air quality permit as allowed in N.C.G.S. 143-215.108A(b). NC DAQ reviewed the request and on November 24, 2008, granted permission to construct, but not operate, these drying ovens. PPG submitted application 2300153.08D, received on November 24, 2008, to operate six single lane natural gas-fired fiber glass drying ovens and one single lane dielectric fiber glass drying oven (ID Nos. ES-14a, ES-14b, ES-14c, ES-15a, ES-15b, ES-15c, and ES-D1) and to remove two three lane natural gas-fired fiber glass drying ovens (ID Nos. ES-14 and ES-15). The new drying ovens will dry fiber glass after it is drawn from the underside of the furnace forehearth, coated with binder solutions, wound on spools, and placed on racks, which are placed in the ovens.
August 22, 2008	T48	08A	Minor	As explained the permit application cover letter…. PPG desires to vent two cartridge-type collectors in the raw material batch house to the outdoors(EPDC182 and 183). Currently the filters vent indoors and are therefore not listed on PPGs air permit. The proposed change will result in a slight increase in PM emissions. The modification will not result in an emissions increase for any other regulated pollutant.
Nov. 14, 2007	T47	1109	App. Deter.	The DAQ response to PPG is paraphrased as follows: In light of the information provided with the application and the email received on November 13, 2007, personnel of the Division of Air Quality have determined that you do not need an Air Permit to continue operating the oxygen-gas burners on a portion of Furnace 524's forehearth (approved on a trial basis on November 17, 2006) as well as to expand the use of the technology to the rest of the forehearth of Furnace 524. The following statement (in support of the other information) was what this office thought the most significant in approving your request: "*The capacity of a furnace is constrained by the melter design and its cross sectional area. Changes to the forehearth can therefore not affect the production capacity of the furnace."* Although an Air Permit is not required, the Division of Air Quality is requiring PPG Industries Fiber Glass Products, Inc. to track the production and emissions data for Furnace 524 pursuant to 15A NCAC 2D .0530(v) for the specified period of five years.

Date	Permit No.	App No.	App type	Description
Oct. 15, 2007	T47	07A	502(b) (10)	As explained the permit application cover letter…. PPG desires to add a lint collection system to each of its three existing Remote Wet Cut (RWC) production lines. Venturi wet scrubbers will be installed to control particulate matter (PM) emissions and will exhaust to the atmosphere through new stacks. In addition, the Mooresville Regional Office received a notification that a bagfilter (DC136) will be removed from service and the process modified such that it no longer vents outdoors. It was assumed this would not require a permit modification and can be processed as 502(b)(10) change. This change will also be addressed in this review
Jan. 22, 2007	T46	06B	Minor	On September 22, 2006, the Division of Air Quality (DAQ) Central Office received an application from PPG for a minor modification under 15A NCAC 2Q .0515. Application is made for the addition of a batch storage bin (ID No. EPDC129) and associated bagfilter (ID No. DC-129) serving furnace No. 526. On November 13, 2006, DAQ Central Office received an additional application to: 1) vent existing cartridge-type filters (ID Nos. CD-160 through DC-181) installed on existing raw material batch house bins (ID Nos. EPDC160 through EPDC181) outdoors, and 2) increase the maximum throughput capacity of three existing remote wet cut drying ovens (ID Nos. ESWC367, ESWC368, and ESWC369).
Nov. 2, 2005	T45	05B	502(b) (10)	PPG Industries Fiber Glass Products, Inc. ("PPG") has submitted an application to revise the existing Title V permit for the following reasons: • to vent emissions of existing two mixed batch storage bins associated with furnace 526 to the atmosphere. • to increase the production capacity of existing four, natural gas fired in-line dryers, supporting furnace 526. • to replace the existing control devices on four, natural gas fired in-line dryers, supporting furnace 526. • to increase the heat input rate and throughput capacity of existing three sly wet cut dryers.
Dec.10 , 2004	T44	04C	Admin. Amendment	The effective date was changed from November 27, 2004 to December 10, 2004. See attached e-mail for detailed discussion of the previous permit issuance chronology.
Nov. 12, 2004	T43	NA	NA	Initial TV permit issued with an expiration date of October 31, 2009

III. Regulatory Review

A. RESERVED

This section is the result of emission sources being removed from prior permit revisions. It is left as RESERVED in the event of future modifications.

B. RESERVED

This section is the result of emission sources being removed from prior permit revisions. It is left as RESERVED in the event of future modifications.

C. Fiberglass melting furnace No. 520 (7,280 pounds per hour maximum allowable glass pull rate) using only EFB technology and process consisting of:

a. One natural gas / propane / No. 2 fuel oil direct oxygen fired melter (ID No. 520M),
b. One natural gas / propane / No. 2 fuel oil-fired refiner (ID No. 520R), and
c. Two natural gas / propane / No. 2 fuel oil-fired forehearths (ID No. 520FA and 520FB)

The equipment descriptor will be revised to be consistent with Furnace 526 and will appear as follows:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
Double level fiberglass furnace No. 520, using only EFB technology, consisting of the following:			
520M **NSPS**	natural gas / propane / direct oxygen fired melter) 7,280 pounds glass per hour maximum allowable pull rate)	NA	NA
520R	natural gas / propane-fired refiner	NA	NA
520FA, 520FB	two natural gas / propane-fired forehearths	NA	NA

Note that No.2 fuel oil has been removed as a permitted fuel at the request of the Permittee.

The following table provides a summary of limits and standards for the emission source(s) described above as presented in the current permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter (filterable only) (from melter, refiner, and forehearth)	$E = 4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 pounds per million Btu heat input each	15A NCAC 2D .0516
visible emissions from melter (while operating in accordance with 40 CFR 60.292), refiner and forehearth	20 percent opacity each	15A NCAC 2D .0521
particulate matter (filterable only) (from melter)	as defined in specific conditions, Section 2.2 A. 1.	15A NCAC 2D .0524 (NSPS Subpart CC)

Regulated Pollutant	Limits/Standards	Applicable Regulation
visible emissions from melter (while operating in accordance with 40 CFR 60.293)	as defined in specific conditions, Section 2.2 A. 1.	15A NCAC 2D .0524 (NSPS Subpart CC)
PM-10 (filterable and condensable) (from melter, refiner, and forehearth)	108.7 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
total particulate matter (filterable and condensable) (from melter)	97.15 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
fluorides (from melter)	36.34 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
fluorides	41.35 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
toxic air pollutants	as defined in Section 2.2 C.1. ***State-enforceable only***	15A NCAC 2D .1100

15A NCAC 2D .0515: PARTICULATES FROM MISCELLANEOUS INDUSTRIAL PROCESSES

It is unclear when the last time this furnace was source tested for compliance with 2D .0515. The current permit had a testing requirement for each type of furnace. Thus, in this particular case compliance, with 2D .0515 was determined based on the results of a source test on furnace 525 on January 8, 2012.

This condition will be substantially revised to be consistent with the 2D .0515 condition for furnace 526. The 2D .0515 requirements for furnace 526 were established in permit no. T60 and were subject to public/EPA comments in permit no. T61. The permit review for T60 contains the full details.

A testing requirement for this furnace will be included in the revised permit to get recent data by which to assess compliance with the regulation.

15A NCAC 2D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES

The Permittee has requested that these sources no longer be permitted to fire No. 2 fuel oil. As such, they will only be permitted to burn natural gas and propane. Based on the very low sulfur content of these fuels and the sulfur content of the batch materials, the 2.3 MMBtu/hr limit is not expected to be exceeded. No substantial changes will be made to the existing permit conditions.

15A NCAC 2D .0521: CONTROL OF VISIBLE EMISSIONS

The current permit condition addresses the requirements for the furnace (melter while operating in accordance with 40 CFR 60.292, and refiner and forehearth). The melter is subject to the requirements of NSPS Subpart CC. It utilizes a modified process with no control system and is required to use COMs. As such, this reference to 60.292 is no longer necessary. The permit will be modified as necessary.

The melter stack is still subject to this regulation, but as it utilizes COMs, the requirements are different. A new permit condition will be added to address the requirements of 2D .0521 with respect to the melter.

15A NCAC 2D .0530: PREVENTION OF SIGNIFICANT DETERIORATION

Technically, the current permit condition 2.1.c.4 is a PSD avoidance condition which is currently implemented through 2Q .0317. The permit will be revised accordingly.

The condition requires the following limitations:

Pollutant	Emissions Limitation
PM-10 (filterable and condensable)	108.7 tons per consecutive 12-month period (from melter, refiner, and forehearth)
Particulate matter	97.15 tons per consecutive 12-month period (from melter)
fluorides	41.35 tons per consecutive 12-month period (from melter, refiner, and forehearth) 36.34 tons per consecutive 12-month period (from melter)

A review of the recent emission inventory reports show that the facility is emitting well below the limits shown above. The current permit requires no monitoring recordkeeping or reporting. However, to make the emission limitations practically enforceable, monthly recordkeeping will be added to the permit, consistent with all of the other PSD avoidance conditions.

For fluoride, pursuant to SOC 2002-002, the Permittee is subject to a requirement to limit its fluoride emissions to 0.45 lb/ton on an annual average (See discussion elsewhere). At the furnace maximum production rate of 7,280 lb/hr of glass, the maximum annual fluoride emissions are 7.2 tpy, well below the 36.34 and 41.35 tpy limits. The fluoride limit will be removed from the PSD avoidance condition.

15A NCAC 2D .0524: NEW SOURCE PERFORMANCE STANDARDS – NSPS Subpart CC

As memorialized in the current permit, the Permittee last conducted performance tests on the melter on February 29, 2000, which resulted in a 99% UCL value of 19.5 %.

In the past the DAQ in its Title V permits stated that each exceedance of the 99% Upper Confidence Level (UCL) value, which according to the rule are to be treated as excess emissions and reported, were violations of 2D .0524. In effect, these 99% UCL values were being treated as opacity standards. Saint Gobain Containers (SGCI) had challenged the DAQ that these exceedances were not to be used as an opacity standard but rather to assess if the furnace melter was being properly operated in maintained. This approach was also consistent with the language in the preamble of the rule. As a result, revised monitoring and recordkeeping were incorporated into the SGCI NSPS Subpart CC permit conditions. PPG Shelby has reviewed this approach and has decided that it would like to use it as well.

As a result the permit will be revised accordingly.

State-Enforceable Only

Permit conditions to address the fluoride and filterable PM emission limitations established by Special Order of Consent 2002-002.

PPG and the Environmental Management Commission (EMC), an agency of the state of North Carolina entered into a Special Order of Consent (SOC) to address alleged violations of PSD (2D .0530), NSPS (2D .0524), and state air toxics regulations (2D .1100). The SOC encompassed both this facility and the Lexington facility (which is beyond the scope of the discussion here).

Pursuant to the SOC, the Permittee is required to meet the following through the use of either an emissions control system or the use of a modified material feed known as "environmentally friendly batch" and meeting the following limits:

- Fluorides - 0.45lb/ton (annual average) of glass pulled
- The numerical emission limits for PM in 40 CFR Subpart CC (0.5 g/kg modified process or 0.25 g/kg using controls).

These limits apply to furnace 520 at Shelby. With respect to the PM limitation, furnace 520 meets it by meeting the requirements of NSPS subpart CC which are already included explicitly in the current permit.

With respect to fluorides, the limitation has not been incorporated into the air permit properly to date. See Facility-wide Regulatory Considerations elsewhere in this review for full discussion.

State Enforceable Only
15A NCAC 2D .1100 CONTROL OF TOXIC AIR POLLUTANTS

These sources were included in the most recent dispersion modeling analysis conducted by the Permittee on September 6, 2012.

No changes will be made to existing permit condition 2.2.C.1.

State Enforceable Only
TOXIC AIR POLLUTANT EMISSIONS LIMITATION REQUIREMENT

This condition specifies TAPs for which a permit is required under 2Q .0700 if the facility-wide actual emissions of that TAP exceeds the listed Toxic Permit Emission Rates (TPERS). The applicability of this rule with respect to these emission sources has not changed since last permit issuance.

No changes will be made to existing permit condition 2.2.C.2.

D. The following furnace:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
524 **NSPS**	**fiberglass melting furnace** using only EFB technology – 18,600 pounds glass per hour maximum allowable pull rate. Furnace process consisting of: (a) natural gas / propane direct oxygen fired melter equipped with electric boost (1,950 kW capacity)(ID No. 524M) (b) natural gas / propane-fired, direct oxygen-fired refiner (ID No. 524R) (c) natural gas / propane-fired, direct-oxygen fired forehearth (ID No. 524F)	NA	NA

The equipment descriptor will be revised to be consistent with Furnace 526 and will appear as follows:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
Double level fiberglass furnace No. 524, using only EFB technology, consisting of the following:			
524M **NSPS**	natural gas / propane direct oxygen fired melter equipped with electric boost (1,950 kW capacity) (18,600 pounds glass per hour maximum allowable pull rate)	NA	NA
524R	natural gas / propane / direct oxygen-fired refiner	NA	NA
524F	natural gas / propane / direct oxygen-fired forehearth	NA	NA

This furnace was last modified in permit no. T55 (December 2011) to increase capacity in the maximum hourly capacity of the furnace from 16,200 to 18,600 lb/hr. The implications of this modification will be discussed in context of the applicable regulations.

The following table provides a summary of limits and standards for the emission source(s) described above as presented in the current air permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter (from melter, refiner, and forehearth)	$E = 4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516
visible emissions from melter (while operating in accordance with 40 CFR 60.292), refiner	20 percent opacity	15A NCAC 2D .0521

and forehearth		
particulate matter (filterable only; from melter)	as defined in specific conditions, Section 2.2 A. 1.	15A NCAC 2D .0524 (NSPS Subpart CC)
visible emissions from melter (while operating in accordance with 40 CFR 60.293)	as defined in specific conditions, Section 2.2 A. 1.	15A NCAC 2D .0524 (NSPS Subpart CC)
particulate matter (filterable and condensable from melter, refiner, and forehearth)	72.33 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
PM-10 (filterable and condensable from melter, refiner, and forehearth)	58.19 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
nitrogen oxides	91.20 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
sulfur dioxide	114.4 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
fluorides	93.1 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
toxic air pollutants	as defined in Section 2.2 C.1. ***State-enforceable only***	15A NCAC 2D .1100
toxic air pollutants	as defined in Section 2.2 C.2. ***State-enforceable only***	15A NCAC 2Q .0711

15A NCAC 2D .0515: PARTICULATES FROM MISCELLANEOUS INDUSTRIAL PROCESSES

The furnace melter was last tested on August 23, 2012 with the following results:

2D .0515 allowable emission rate (lb/hr)	20.58
PM, total (lb/hr)	10.71 lb/hr

Based on these results, the furnace is operating well within compliance of 2D .0515.

This condition will be substantially revised to be consistent with the 2D .0515 condition for furnace 526. The 2D .0515 requirements for furnace 526 were established in permit no. T60 and were subject to public/EPA comments in permit no. T61.

The permit review for T60 contains the full details.

15A NCAC 2D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES

The Permittee has requested that these sources no longer be permitted to fire No. 2 fuel oil in permit No. T55. As such, they will only be permitted to burn natural gas and propane. Based on the very low sulfur content of these fuels and the sulfur content of the batch materials, the 2.3 MMBtu/hr limit is not expected to be exceeded. No substantial changes will be made to the existing permit conditions.

15A NCAC 2D .0521: CONTROL OF VISIBLE EMISSIONS

The current permit condition addresses the requirements for the furnace (melter while operating in accordance with 40 CFR 60.292, and refiner and forehearth). The melter is subject to the requirements of NSPS Subpart CC. It utilizes a modified process with no control system and is required to use COMs. As such, this reference to 60.292 is no longer necessary. The permit will be modified as necessary.

The melter stack is still subject to this regulation, but as it utilizes COMs, the requirements are different. A new permit condition will be added to address the requirements of 2D .0521 with respect to the melter.

15A NCAC 2D .0530: PREVENTION OF SIGNIFICANT DETERIORATION
Technically, the current permit condition 2.1.D.4 is a PSD avoidance condition which is currently implemented through 2Q .0317. The permit will be revised accordingly.

The condition requires the following limitations:

Pollutant	Emissions Limitation
sulfur dioxide	114.4 tons per consecutive 12-month period
particulate (filterable and condensable)	72.33 tons per consecutive 12-month period
PM-10 (filterable and condensable)	58.19 tons per consecutive 12-month period
nitrogen oxides	91.2 tons per consecutive 12-month period
fluorides	93.1 tons per consecutive 12-month period

A review of the recent emission inventory reports show that the facility is emitting well below the limits shown above. As such, the reporting requirement will be reduced from quarterly to semiannually. For fluoride, pursuant to SOC 2002-002, the Permittee is subject to a requirement to limit its fluoride emissions to 0.45 lb/ton on an annual average (See discussion elsewhere). At the furnace maximum production rate of 18,600 lb/hr of glass, the maximum annual fluoride emissions are 18.3 tpy, well below the 93.1 tpy limit. The fluoride limit will be removed from the PSD avoidance condition.

15A NCAC 2D .0524: NEW SOURCE PERFORMANCE STANDARDS – NSPS Subpart CC

As memorialized in the current permit, the Permittee last conducted performance tests on the melter on December 11, 2003, which resulted in a 99% UCL value of 6.9 %.

In the past the DAQ in its Title V permits stated that each exceedance of the 99% Upper Confidence Level (UCL) value, which according to the rule are to be treated as excess emissions and reported, were violations of 2D .0524. In effect, these 99% UCL values were being treated as opacity standards. Saint Gobain Containers (SGCI) had challenged the DAQ that these exceedances were not to be used as an opacity standard but rather to assess if the furnace melter was being properly operated in maintained. This approach was also consistent with the language in the preamble of the rule. As a result, revised monitoring and recordkeeping were incorporated into the SGCI NSPS Subpart CC permit conditions. PPG Shelby has reviewed this approach and has decided that it would like to use it as well.

As a result the permit will be revised accordingly.

State-Enforceable Only

Permit conditions to address the fluoride and filterable PM emission limitations established by Special Order of Consent 2002-002.

PPG and the Environmental Management Commission (EMC), an agency of the state of North Carolina entered into a Special Order of Consent (SOC) to address alleged violations of PSD (2D .0530), NSPS (2D .0524), and state air toxics regulations (2D .1100). The SOC encompassed both this facility and the Lexington facility (which is beyond the scope of the discussion here).

Pursuant to the SOC, the Permittee is required to meet the following through the use of either an emissions control system or the use of a modified material feed known as "environmentally friendly batch" and meeting the following limits:

- Fluorides - 0.45lb/ton (annual average) of glass pulled
- The numerical emission limits for PM in 40 CFR Subpart CC (0.5 g/kg modified process or 0.25 g/kg using controls).

These limits apply to furnace 524 at Shelby. With respect to the PM limitation, furnace 524 meets it by meeting the requirements of NSPS subpart CC which are already included explicitly in the current permit.

With respect to fluorides, the limitation has not been incorporated into the air permit properly to date. See Facility-wide Regulatory Considerations elsewhere in this review for full discussion.

State Enforceable Only

15A NCAC 2D .1100 CONTROL OF TOXIC AIR POLLUTANTS

These sources were included in the most recent dispersion modeling analysis conducted by the Permittee on September 6, 2012.

No changes will be made to existing permit condition 2.2.C.1.

State Enforceable Only

TOXIC AIR POLLUTANT EMISSIONS LIMITATION REQUIREMENT

This condition specifies TAPs for which a permit is required under 2Q .0700 if the facility-wide actual emissions of that TAP exceeds the listed Toxic Permit Emission Rates (TPERS). The applicability of this rule with respect to these emission sources has not changed since last permit issuance.

No changes will be made to existing permit condition 2.2.C.2.

E. Fiberglass melting furnace No. 525 (15,822 pounds per hour maximum allowable glass pull rate) using only EFB technology and process consisting of:

a. One natural gas / propane / No. 2 fuel oil direct oxygen fired melter (ID No. 525M),

b. One natural gas / propane / No. 2 fuel oil-fired refiner (ID No. 525R), and

c. One natural gas / propane / No. 2 fuel oil-fired forehearth (ID No. 525F)

The above descriptor for 525 will be revised into a tabular format (consistent with Furnace 526) that will appear in the revised permit as follows:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
Double level fiberglass furnace No. 525, using only EFB technology, consisting of the following:			
525M	natural gas / propane / direct oxygen fired melter (15,822 pounds glass per hour maximum allowable pull rate)	NA	NA
525R	natural gas / propane-fired refiner	NA	NA
525F	natural gas / propane-fired forehearth	NA	NA

This furnace was not in operation from November 2003 until 2011. It was last source tested for PM on January 18, 2012. On July 29, 2015 the Permittee submitted a letter describing why the extended shutdown and subsequent restart should not have PSD implications regarding the EPA's source reactivation policy. The reasons included the following:

- Furnace 525 was idled due to a downturn in the economy and reduced demand for glass. PPG idled the furnace at its own discretion.
- PPG's Accounting Department classified the Furnace as "Idle" (not operating, but potential to return to service) from October 2003 until February 2011.
- Since its construction, Furnace 525 has been listed as an emission source in PPG's Air Permit. The furnace was not removed from the permit once it was idled.
- Furnace 525 was included in the facility's initial Title V air permit application and was also included in the 2009 Title V permit renewal application.
- While idled, PPG continued to report furnace 525 emissions in its annual air emission inventories.
- While idled, PPG continued to report furnace 525 emissions in its quarterly and semi-annual Title V reports.
- While idled, PPG included furnace 525 in the annual Title V compliance certification, which is submitted to NCDAQ and EPA.
- PPG included Furnace 525 in its annual Green House Gas Emission Report to the EPA.
- Potential emissions were included for furnace 525 in the 2010 Toxic Air Pollutant dispersion modeling analysis.
- PPG's Maintenance Department has continuously maintained the fire protection system for furnace 525.
- Seasonal maintenance practices for supporting equipment, such as freeze protection, emergency generators were maintained for the furnace.
- Gas and electric utilities were locked and tagged out as "out of operation", although the lines were not disconnected.
- PPG has continuously maintained the program logic controllers that supported the furnace and systems.

The DAQ concurs that the restart of furnace 525 should not cause Furnace 525 to be considered a new source for PSD purposes.

The following table provides a summary of limits and standards for the emission source(s) described above, as presented in the current permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter (from melter, refiner, and forehearth)	$E = 4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516
visible emissions	20 percent opacity	15A NCAC 2D .0521
particulate matter (filterable only)	Melter only, **State enforceable only** 1.0 pounds per ton of glass produced	NCGS 143-215.108(c)
fluorides	Melter only, **State Enforceable Only** 0.45 pounds per ton of glass pulled (annual basis)	NCGS 143-215.108(c)
particulate matter (from melter, refiner, and forehearth)	81.63 tons per consecutive 12-month period	15A NCAC 2Q.0317 (PSD avoidance)
PM-10 (from melter, refiner, and forehearth)	71.63 tons per consecutive 12-month period	
nitrogen oxides	100 tons per consecutive 12-month period	
sulfur dioxide	164.69 tons per consecutive 12-month period	
carbon monoxide	114.55 tons per consecutive 12-month period	
fluorides	106.23 tons per consecutive 12-month period	
toxic air pollutants	**State Enforceable Only** See Section 2.2 C.1.	15A NCAC 2D .1100
toxic air pollutants	**State Enforceable Only** See Section 2.2 C.2.	15A NCAC 2Q .0711

15A NCAC 2D .0515: PARTICULATES FROM MISCELLANEOUS INDUSTRIAL PROCESSES

The furnace melter was last tested on January 18, 2012 with the following results:

PM filterable (lb/ton glass pulled)	0.77
PM condensable (lb/ton glass pulled)	0.43
PM total (lb/ton glass pulled)	1.21
2D .0515 allowable emission rate (lb/hr)	12.6
PM, total (lb/hr)	5.04 lb/hr

Based on these results, the furnace is operating well within compliance of 2D .0515.

This condition will be substantially revised to be consistent with the 2D .0515 condition for furnace 526. The 2D .0515 requirements for furnace 526 were established in permit no. T60 and were subject to public/EPA comments in permit no. T61. The permit review for T60 contains the full details.

15A NCAC 2D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES

The Permittee has requested that these sources no longer be permitted to fire No. 2 fuel oil. As such, they will only be permitted to burn natural gas and propane. Based on the very low sulfur content of these fuels and the sulfur content of the batch materials, the 2.3 MMBtu/hr limit is not expected to be exceeded. No substantial changes will be made to the existing permit conditions with the exception that reference to the ability to fire No.2 fuel oil will be removed.

15A NCAC 2D .0521: CONTROL OF VISIBLE EMISSIONS

A review of the current permit conditions for this regulation shows that the conditions are all consistent with current DAQ policy. The most current compliance inspection noted no deviations. No substantial changes will be made to the existing permit conditions.

15A NCAC 2D .0524: NEW SOURCE PERFORMANCE STANDARDS
The current permit cites this regulation with the following requirements:

a. *In order that the installation of oxygen firing technology on furnace (ID No. 525) not be considered modification pursuant to 40 CFR 60.14, filterable particulate matter emissions from the furnace (melter only), shall not exceed 1 lb per ton of glass produced.*
b. *To assure compliance with this requirement, the Permittee shall use only the EFB technology in the furnace.*

PPG and the Environmental Management Commission (EMC), an agency of the state of North Carolina entered into a Special Order of Consent (SOC) to address alleged violations of PSD (2D .0530), NSPS (2D .0524), and state air toxics regulations (2D .1100). The SOC encompassed both this facility and the Lexington facility (which is beyond the scope of the discussion here).

Pursuant to the SOC, the Permittee is required to meet the following through the use of either an emissions control system or the use of a modified material feed known as "environmentally friendly batch and meeting the following limits:

- Fluorides - 0.45lb/ton (annual average) of glass pulled
- The numerical emission limits for PM in 40 CFR Subpart CC (0.5 g/kg modified process or 0.25 g/kg using controls).

These limits apply to furnace 525 at Shelby. As established at the PPG Lexington facility, the proper statutory authority to address these alleged violations at the Shelby facility is NCGS 143-215.108(c).The regulatory citation will be revised accordingly.

With respect to fluorides, the limitation has not been incorporated into the air permit properly to date. See Facility-wide Regulatory Considerations elsewhere in this review for full discussion.

15A NCAC 2D .0530: PREVENTION OF SIGNIFICANT DETERIORATION
Technically, the current permit condition 2.1.E.5 is PSD avoidance condition which is currently implemented through 2Q .0317. The permit will be revised accordingly.

The condition requires the following limitations:

Pollutant	**Emissions Limitation**
sulfur dioxide	164.69 tons per consecutive 12-month period
particulate matter	81.63 tons per consecutive 12-month period
PM-10	71.63 tons per consecutive 12-month period
nitrogen oxides	100 tons per consecutive 12-month period
carbon monoxide	114.55 tons per consecutive 12-month period
fluorides	106.23 tons per consecutive 12-month period

The permit also requires source testing if the furnace "operates for more than seven days using No. 2 fuel oil during any 12-month period." Based on a review of the initial Title V review document, the fact that it only uses the environmental friendly batch (EFB) with low fluoride content and typically fires natural gas, the fluoride limit will never be reached and the SO2 limit may only possibly be reached if it fires No. 2 fuel oil. Regarding the other pollutants, a cursory analysis was done by this engineer to determine the likelihood of these PSD limitations being reached. The emissions inventory for 2012 through 2014 was scaled to the maximum permitted throughput of the furnace. These values were then compared to the allowable emission rates included in this permit condition. Assuming that the emission factors were representative, these PSD avoidance limits could not be exceeded. However, it is possible that the emission factors could change. The Permittee did not request to have these conditions removed and as such the limitations will remain.

For fluoride however, pursuant to SOC 2002-002, the Permittee is subject to a requirement to limit its fluoride emissions to 0.45 lb/ton on an annual average. At the furnace maximum production rate of 15,822 lb/hr of glass, the maximum annual fluoride emissions are 15.6 tpy, well below the 106.23 tpy limit. The fluoride limit will be removed from the PSD avoidance condition.

The Permittee has requested that the permitted ability to fire No. 2 fuel oil to be removed. As such, the testing condition in the existing permit that triggered off of the use of No. 2 fuel oil will be removed.

The recordkeeping will be revised to include the calculation of monthly emissions regardless of the fuels combusted. PSD avoidance limitations must have practically enforceable emission limitations.

A review of the recent emission inventory reports show that the facility is emitting well below the limits shown above. As such, the reporting requirement will be reduced from quarterly to semiannually.

State Enforceable Only
15A NCAC 2D .1100 CONTROL OF TOXIC AIR POLLUTANTS

These sources were included in the most recent dispersion modeling analysis conducted by the Permittee on September 6, 2012.

No changes will be made to existing permit condition 2.2.C.1.

State Enforceable Only
TOXIC AIR POLLUTANT EMISSIONS LIMITATION REQUIREMENT

This condition specifies TAPs for which a permit is required under 2Q .0700 if the facility-wide actual emissions of that TAP exceeds the listed Toxic Permit Emission Rates (TPERS). The applicability of this rule with respect to these emission sources has not changed since last permit issuance.

No changes will be made to existing permit condition 2.2.C.2.

F. The following furnace:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
Fiberglass melting furnace No. 526 (20,000 pounds per hour maximum allowable glass pull rate) using only EFB technology and process consisting of:			
526M **NSPS**	natural gas / propane / No. 2 fuel oil direct oxygen fired melter with 2400 kW electric boost	NA	NA
526R	natural gas / propane / No. 2 fuel oil-fired refiner	NA	NA
526F	natural gas / propane / No. 2 fuel oil-fired forehearth	NA	NA

Furnace 526 was modified most recently in permit revision no. T60. As stated in the permit application:

> PPG is proposing modifications to Furnace No. 526. The modifications will take place while the furnace is shut down for a routine cold repair (rebricking). PPG proposes to modify the furnace by adding 2,400 kilowatts of electric boost. The modification will include related electrical changes necessary to supply power to the electric boost electrodes, addition of a new cooling water system for the electrodes, and the installation of refractory for the electrode blocks. Changes to the melter burners are also anticipated. The total heat input of the burners will be decreased. The size, quantity and location of the burners will be changed. Additional burner blocks will be added to accommodate the burner changes. Production is projected at 20,000 lb/hr, the currently permitted capacity of the furnace.
>
> The forehearth will also be modified. The internal forehearth dimensions will be increased and the distance between the forming positions will be increased (the total number of forming positions will be decreased). PPG also plans to add a combustion control station which will improve the ability to control the gas firing rate. No increase in the heat capacity of the forehearth will occur (the total heat input will be decreased).
>
> In addition to the modifications to the furnace, some of the existing winders and choppers will be replaced with larger capacity winders and choppers. Neither the winders nor choppers are a source of air emissions.

The permit review document for permit no. T60 provides a complete and thorough regulatory review that is still valid for much of the regulatory requirements. Also note the modifications implemented in permit no. T60 were subject to public/EPA review procedures in permit no. T61. However, additional discussion is in order for some of the applicable requirements.

Also note that the Permittee has requested to remove the permitted ability to fire No. 2 fuel oil.

The following table provides a summary of limits and standards for the emission source(s) described above (as presented in permit no. T61):

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter (from melter, refiner, and forehearth)	$E = 4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516

Regulated Pollutant	Limits/Standards	Applicable Regulation
visible emissions (from refiner and forehearth)	20 percent opacity	15A NCAC 2D .0521
particulate matter (filterable only) (from melter)	as defined in specific conditions, Section 2.2 A. 1.	15A NCAC 2D .0524 (NSPS Subpart CC)
visible emissions from melter (while operating in accordance with 40 CFR 60.293)	as defined in specific conditions, Section 2.2 A. 1.	15A NCAC 2D .0524 (NSPS Subpart CC)
sulfur dioxide	114.37 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
fluorides	222.04 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
toxic air pollutants	as defined in Section 2.2 C.1. ***State-enforceable only***	15A NCAC 2D .1100
toxic air pollutants	as defined in Section 2.2 C. 2. ***State-enforceable only***	15A NCAC 2Q .0711
Multiple pollutants	Testing, recordkeeping and reporting	15A NCAC 2D .0530 (u)

15A NCAC 2D .0515: PARTICULATES FROM MISCELLANEOUS INDUSTRIAL PROCESSES

The discussion provided in the review for permit no. T60 is still valid. No substantial changes will be made to the existing permit conditions.

15A NCAC 2D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES

The discussion provided in the review for permit no. T60 is still valid. No substantial changes will be made to the existing permit conditions with the exception that reference to the ability to fire No.2 fuel oil will be removed.

15A NCAC 2D .0521: CONTROL OF VISIBLE EMISSIONS

With respect to the refiner and forehearth stacks no changes will be made. However, this rule will now be applied to the melter stack. As discussed in the NSPS Subpart CC discussion below, 99% Upper Confidence Level (UCL) values were effectively being treated as an opacity standard and as such 2D .0521 would not apply. However, with the revised NSPS approach, the 99% UCL will not be treated as an opacity standard and hence 2D.0521 will apply.

15A NCAC 2D .0524: NEW SOURCE PERFORMANCE STANDARDS – NSPS Subpart CC

As memorialized in the current permit, the Permittee last conducted performance tests on the melter on May 2, 2007, which resulted in a 99% UCL value of 5.23 %.

In the past the DAQ in its Title V permits stated that each exceedance of the 99% Upper Confidence Level (UCL) value, which according to the rule are to be treated as excess emissions and reported, were violations of 2D .0524. In effect, these 99% UCL values were being treated as opacity standards. Saint Gobain Containers (SGCI) had challenged the DAQ that these exceedances were not to be used as an opacity standard but rather to assess if the furnace melter was being properly operated in maintained. This approach was also consistent with the language in the preamble of the rule. As a result, revised monitoring and recordkeeping were incorporated into the SGCI NSPS

Subpart CC permit conditions. PPG Shelby has reviewed this approach and has decided that it would like to use it as well.

As a result the permit will be revised accordingly.

15A NCAC 2D .0530: PREVENTION OF SIGNIFICANT DETERIORATION

Technically the current permit condition 2.1.F. a PSD avoidance condition which is currently implemented through 2Q .0317. The permit will be revised accordingly.

The condition requires the following limitations:

Pollutant	Emissions Limitation
sulfur dioxide	114.37 tons per consecutive 12-month period
fluorides	222.04 tons per consecutive 12-month period

The permit also requires source testing if the furnace "operates for more than seven days using No. 2 fuel oil during any 12-month period." Based on a review of the initial Title V review document, the fact that it only uses the environmental friendly batch (EFB) with low fluoride content and typically fires natural gas, the fluoride limit will never be reached and the SO2 limit may only possibly be reached if it fires No. 2 fuel oil. However, the Permittee has requested that the permitted ability to fire No. 2 fuel oil to be removed. Thus, at the given permitted capacity, the furnace would be unable to emit these levels of sulfur dioxide or fluorides.

As such, this PSD avoidance condition will be removed from the air permit.

15A NCAC 2D. 0530(u): USE OF PROJECTED ACTUAL EMISSIONS TO AVOID APPLICABILITY OF PREVENTION OF SIGNIFICANT DETERIORATION REQUIREMENTS

This condition was placed into the permit in revision no. T60 as a result of the modifications discussed above. The discussion provided in the review for permit no. T60 is still valid with the exception of the NOx analysis. See the discussion below.

In March of 2014, PPG submitted an air permit application (no. 2300153.14A) for proposed modifications to Furnace No. 526. Permit T60 was subsequently issued on July 1, 2014. Condition 2.1.F.5.c of that permit required PPG to conduct stack testing of the furnace to confirm the accuracy of the emission estimates used in the application. The required stack testing was performed on January 28, 2015. The results of the stack testing indicated that emissions of Nitrogen Oxides (NOx) were greater than the emissions used in the application. The tested NOx rate was determined to be 2.24 lb NOx/ton of glass produced versus the emissions estimate of 1.80 lb NOx/ton that was used in the application.

Pursuant to the permit, PPG is therefore required to resubmit an application to demonstrate compliance with the Prevention of Significant Deterioration (PSD) requirements of 15A NCAC 2D.0530.

PPG resubmitted the application (application no. 2300153.15A) and the only difference is the change in the estimated NOx emission factor. This results in an increase of the net emissions increase of NOx estimate from 3.82 to 4.82 tpy, which is still well below the 40 tpy year significance threshold. The projected actual emissions estimate for the project will increase from 78.70 to 98.11 tpy.

The current permit condition will be revised to remove the testing requirement and permit application submittal requirement as they have been satisfied as discussed above. Consistent with 2D .0530(u) conditions in other TV permits, the revised permit condition will also include a table of the projected actual emissions to facilitate compliance review.

State Enforceable Only
15A NCAC 2D .1100 CONTROL OF TOXIC AIR POLLUTANTS

These sources were included in the most recent dispersion modeling analysis conducted by the Permittee on September 6, 2012.

No changes will be made to existing permit condition 2.2.C.1.

State Enforceable Only
TOXIC AIR POLLUTANT EMISSIONS LIMITATION REQUIREMENT

This condition specifies TAPs for which a permit is required under 2Q .0700 if the facility-wide actual emissions of that TAP exceeds the listed Toxic Permit Emission Rates (TPERS). The applicability of this rule with respect to these emission sources has not changed since last permit issuance.

No changes will be made to existing permit condition 2.2.C.2.

State-Enforceable Only

Permit conditions to address the fluoride and filterable PM emission limitations established by Special Order of Consent 2002-002.

PPG and the Environmental Management Commission (EMC), an agency of the state of North Carolina entered into a Special Order of Consent (SOC) to address alleged violations of PSD (2D .0530), NSPS (2D .0524), and state air toxics regulations (2D .1100). The SOC encompassed both this facility and the Lexington facility (which is beyond the scope of the discussion here).

Pursuant to the SOC, the Permittee is required to meet the following through the use of either an emissions control system or the use of a modified material feed known as "environmentally friendly batch and meeting the following limits:

- Fluorides - 0.45lb/ton (annual average) of glass pulled
- The numerical emission limits for PM in 40 CFR Subpart CC (0.5 g/kg modified process or 0.25 g/kg using controls).

These limits apply to furnace 526 at Shelby. With respect to the PM limitation, furnace 526 meets it by meeting the requirements of NSPS subpart CC which are already included explicitly in the current permit.

With respect to fluorides, the limitation has not been incorporated into the air permit properly to date. See Facility-wide Regulatory Considerations elsewhere in this review for full discussion.

G. The following sources:

Table 2.1.G.1.

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ESDC116(silo #5)	One raw material storage silo (34 tons/hr nominal process rate)	DC116(silo#5), DC117(silo#5)	bagfilter (10:1 gas-to-cloth ratio) in parallel with bagfilter (10:1 gas-to-cloth ratio)
ESDC118(silo #6)	One raw material storage silo (34 tons/hr nominal process rate)	DC118(silo #6), DC131(silo #6)	bagfilter (10:1 gas-to-cloth ratio) in parallel with bagfilter (10:1 gas-to-cloth ratio
ESDC127(silo #14)	One raw material storage silos (34 tons/hr nominal process rate)	DC127(silo #14)	Cartridge filter (150 square feet of filter area)
ESDC153(silo #15)	One raw material storage silos (34 tons/hr nominal process rate)	DC153(silo #15)	One baghouse (10:1 gas-to-cloth ratio)
ESDC132(silo #18)	One raw material storage silo (34 tons/hr nominal process rate each)	DC132(silo #18), DC133(silo #18)	bagfilter (10:1 gas-to-cloth ratio) in parallel with bagfilter (10:1 gas-to-cloth ratio)
ESDC134(silo #19)	One raw material storage silo (34 tons/hr nominal process rate)	DC134(silo #19), DC135(silo #19)	Cartridge filter (150 square feet of filter area) in parallel with Cartridge filter (150 square feet of filter area)
ESDC112(silo #1), ESDC113(silo #2), ESDC114(silo #3), ESDC115(silo #4), ESDC124(silo #11), ESDC125(silo #12), ESDC126(silo #13), ESDC154(silo #16)	Eight raw material storage silos (34 tons/hr nominal process rate each)	DC112,(silo #1), DC113(silo #2), DC114(silo #3), DC115(silo #4), DC124(silo #11), DC125(silo #12), DC126(silo #13), DC154(silo #16)	Eight baghouses (10:1 gas-to-cloth ratio each)

Table 2.1.G.2.

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
525FBSB#1 525FBSB#2	Two furnace batch storage bins serving furnace 525 (10.3 tons/hr nominal process rate each)	DC100, DC101	Two cartridge filters (1,080 square feet of filter area , each)
524FBSB#1 524FBSB#2	Two furnace batch storage bins serving furnace 524 (30 tons/hr nominal process rate each)	DC102, DC103	Two baghouses (10:1 gas-to-cloth ratio each)

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
520FBSB#1 520FBSB#2	Two furnace batch storage bins serving furnace 520 (10 tons/hr nominal process rate each)	DC104, DC105	Two baghouses (10:1 gas-to-cloth ratio each)

Table 2.1.G.3.

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
526MBSB#1, 526MBSB#2	Two mixed batch storage bins serving furnace 526 (12.2 tons/hr nominal process rate each)	DC382, DC383	Two baghouses (5.3:1 gas-to-cloth ratio each)
EPDC129	One batch storage bin (13 tons/hr nominal process rate) serving furnace 526	DC129	One baghouse (8:1 gas-to-cloth ratio)

The following table provides a summary of limits and standards for the emission source(s) described above as presented in the current permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E = 4.10P^{0.67}$ for $P \leq 30$ tons/hr $E = 55.0\ P^{0.11} - 40$ for $P > 30$ tons/hr where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	20 percent opacity each	15A NCAC 2D .0521
particulate matter	23.04 tons per consecutive 12-month period combined total **Table 2.1.G.1** 1.05 tons per consecutive 12-month period each **Table 2.1.G.2**	15A NCAC 2D .0530 (PSD avoidance)

A review of the current permit conditions for all the above regulations show that the conditions are all consistent with current DAQ policy. The most current compliance inspection noted no deviations. No substantial changes will be made to the existing permit conditions.

H. The following sources:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ESDC119 (silo #7), ESDC120 (silo #8), ESDC123 (silo #10)	Three batch storage silos (34 tons/hr nominal process rate each)	DC119(silo#7), DC120(silo#8), DC123, DC152(silo#10)	Four baghouses (10:1 gas-to-cloth ratio each), two installed on silo #10, and one on silo #7 and silo #8
ESDC121 (silo #9),	One batch storage silo (34 tons/hr nominal process rate)	DC121, DC122 (silo#9)	Cartridge filter (150 square feet of filter area) in parallel with Cartridge filter (150 square feet of filter area

These sources, with the exception of the filter systems on silo #9 have not been modified since the last permit renewal (initial TV permit). The filter systems on silo #9 were included in permit revision no. T59. A full regulatory review for the silo #9 filter system was conducted at that time and the associated permit conditions were reviewed and updated at that time.

The following table provides a summary of limits and standards for the emission source(s) described above as presented in the current permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation
visible emissions	20 percent opacity each	15A NCAC 2D .0521
particulate matter	7.45 tons per consecutive 12-month period combined total	15A NCAC 2D .0530

A review of the current permit conditions for all the above regulations show that the conditions are all consistent with current DAQ policy. The most current compliance inspection noted no deviations. No substantial changes will be made to the existing permit conditions.

I. The following sources:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES378	One natural gas-fired in-line dryer supporting furnace 526 (2 MMBtu per hour maximum heat input rate , 2,400 dry lbs/hr nominal production rate)	EC378	One venturi scrubber (45 gallons per minute liquid injection rate)
ES381	One natural gas-fired in-line dryer supporting furnace 526 (1.5 MMBtu per hour maximum heat input rate 1,500 dry lbs/hr nominal production rate)	EC381	One venturi scrubber (45 gallons per minute liquid injection rate)
ES379 ES380	Two natural gas-fired in-line dryers supporting furnace 526 (2 MMBtu per hour maximum heat input rate 2,100 dry lbs/hr nominal production rate each)	EC379 EC380	One venturi scrubber (45 gallons per minute liquid injection rate) installed on each dryer

These dryers were modified in permit no. T45 which included a complete regulatory review. A review of the current permit conditions for all the above regulations show that the conditions are all consistent with current DAQ policy. The most current compliance inspection noted no deviations. No substantial changes will be made to the existing permit conditions.

For permitting consistency the maximum heat input values will be added to the emission source descriptions.

The following table provides a summary of limits and standards for the emission source(s) described above as presented in the current permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E = 4.10P^{0.67}$ for $P \leq 30$ tons/hr $E = 55.0 P^{0.11} - 40$ for $P > 30$ tons/hr where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 lbs/million Btu each	15A NCAC 2D .0516
visible emissions	20 percent opacity each	15A NCAC 2D .0521
toxic air pollutants	**State Enforceable Only** See Section 2.2 C.1.	15A NCAC 2D .1100
toxic air pollutants	**State Enforceable Only** See Section 2.2 C.2.	15A NCAC 2Q .0711

J. Reserved

This section is the result of emission sources being removed from prior permit revisions. It is left as RESERVED in the event of future modifications.

K. The following source:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES97	One binder mix room ventilation (12,000 lbs/hr nominal process rate)	97EC	One cartridge filter (3,048 square feet of filter area)

This source has not been modified since the last permit renewal (initial TV permit).

The following table provides a summary of limits and standards for the emission source(s) described above, as presented in the current permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E = 4.10P^{0.67}$ for $P \leq 30$ tons/hr $E = 55.0 P^{0.11} - 40$ for $P > 30$ tons/hr where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	20 percent opacity	15A NCAC 2D .0521
volatile organic compounds	See Section 2.2 B.1.	15A NCAC 2D .0958
toxic air pollutants	**State Enforceable Only** See Section 2.2 C.1.	15A NCAC 2D .1100
toxic air pollutants	**State Enforceable Only** See Section 2.2 C. 2.	15A NCAC 2Q .0711

A review of the current permit conditions for all the above regulations show that the conditions are all consistent with current DAQ policy. The most current compliance inspection noted no deviations. No substantial changes will be made to the existing permit conditions.

L. The following source:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ESCC96	One caustic brush cleaning system (2,600 lbs/hr nominal process rate)	CDWS96	One packed cross-flow scrubber (34 gallons per minute liquid injection rate)

This source has not been modified since the last permit renewal (initial TV permit).

The following table provides a summary of limits and standards for the emission source(s) described above:

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E = 4.10P^{0.67}$ for $P \leq 30$ tons/hr $E = 55.0 P^{0.11} - 40$ for $P > 30$ tons/hr where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	20 percent opacity	15A NCAC 2D .0521
volatile organic compounds	See Section 2.2 B.1.	15A NCAC 2D .0958

A review of the current permit conditions for all the above regulations show that the conditions are all consistent with current DAQ policy. The most current compliance inspection noted no deviations. No substantial changes will be made to the existing permit conditions.

M. The following engines:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ESDG85, ESDG86 ESDG88A, ESDG88B **MACT Subpart ZZZZ**	Four diesel-fired emergency generators (two 1200 hp each and two 1800 hp each)	NA	NA

The following table provides a summary of limits and standards for the emission source(s) described above, as presented in the current permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation
sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516
visible emissions	20 percent opacity each (ID Nos. ESDG88A and ESDG88B) 40 percent opacity each (ID Nos. ESDG85 and ESDG86)	15A NCAC 2D .0521
nitrogen oxide	40 tons per consecutive 12 month period	15A NCAC 2D .0530 (PSD Avoidance)
toxic air pollutants	**State Enforceable Only** See Section 2.2 C.1.	15A NCAC 2D .1100
toxic air pollutants	**State Enforceable Only** See Section 2.2 C. 2.	15A NCAC 2Q .0711
hazardous air pollutants	No monitoring, recordkeeping, reporting or notification requirements.	15A NCAC 2D .1111 [40 CFR Part 63, Subpart ZZZZ]

These 4 emergency engines predate the last TV permit renewal (initial TV permit).

15A NCAC 2D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES
This rule has not been revised since the initial TV permit. The existing permit conditions are consistent with current DAQ policy. No substantial changes will be made to the permit conditions addressing this regulation.

15A NCAC 2D .0521: CONTROL OF VISIBLE EMISSIONS
This rule has not been revised since the initial TV permit. The permit requires visible emissions (VE) readings if the engines operate over 4 hours per month. Current DAQ policy does not require VE readings or any M/R/R for diesel fuel-fired emergency engines. The most recent compliance inspection indicates no deviations. The permit will be revised accordingly.

15A NCAC 2D .0530: PREVENTION OF SIGNIFICANT DETERIORATION
The permit contains a 40 tons of nitrogen oxides (NOx) per consecutive 12-month period limitation for all 4 engines with an operating limit of 1000 hours per engine per consecutive 12-month period as well/

Technically this a PSD avoidance condition which is currently implemented through 2Q .0317. The permit will be revised accordingly.

The condition requires quarterly reporting. Examination of the most recent inspection report shows the hours of operation for each of these engines is on the order of tens of hours per year. Reporting will be revised to semiannually, which is still consistent with Title V permitting requirements.

No other substantial changes will be made to the existing permit condition.

15A NCAC 2D .1111: MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY

As existing emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, these engines do not have to meet the requirements of 40 CFR 63 Subpart ZZZZ and Subpart A.

No substantial changes will be made to the existing permit condition.

State Enforceable Only
15A NCAC 2D .1100 CONTROL OF TOXIC AIR POLLUTANTS

In the past few years the state enforceable only air toxics regulations 2Q .0700 and 2D .1100 have been revised dramatically with respect to combustion sources. Currently MACT affected sources (such as these engines) are no longer subject to 2Q .0700 air toxics permitting procedures. However, the State of NC still has an obligation to ensure that there is no "unacceptable risk" associated with the permitting and operation of sources exempted from the 2Q .0700 permitting procedures. These sources were included in the most recent dispersion modeling analysis conducted by the Permittee on September 6, 2012.

No changes will be made to existing permit condition 2.2.C.1.

State Enforceable Only
TOXIC AIR POLLUTANT EMISSIONS LIMITATION REQUIREMENT

This condition specifies TAPs for which a permit is required under 2Q .0700 if the facility-wide actual emissions of that TAP exceeds the listed Toxic Permit Emission Rates (TPERS).

As discussed above, in the past few years the state enforceable only air toxics regulations 2Q .0700 and 2D .1100 have been revised dramatically with respect to combustion sources. Currently MACT affected sources (such as these engines) are no longer subject to 2Q .0700 air toxics permitting procedures. However, the State of NC still has an obligation to ensure that there is no "unacceptable risk" associated with the permitting and operation of sources exempted from the 2Q .0700 permitting procedures. Since the obligation is now on the State the requirements of this permit condition with respect to 2Q .0711 do not apply.

Applicability of this permit condition with respect to these sources will be removed.

N. The following boilers:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ESB83A	One natural gas/No. 2 fuel oil fired boiler (25.1 million Btu/hr nominal heat input rate each)	NA	NA
ESB83B	One natural gas/No. 2 fuel oil fired boiler (16.33 million Btu/hr nominal heat input rate each)	NA	NA
ESB83C	Natural gas-fired boiler (0.84 million Btu/hr heat input rate)	NA	NA

The following table provides a summary of limits and standards for the emission source(s) described above, as presented in the current permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulates	0.40 pound per million Btu heat input each for ESB83A and ESB83B; and 0.39 pound per million Btu heat input for ESB83C	15A NCAC 2D .0503
sulfur dioxide	2.3 lbs/million Btu heat input each	15A NCAC 2D .0516
visible emissions	20 percent opacity each	15A NCAC 2D .0521
hazardous air pollutants	Best Combustion Practices See Section 2.2 D. ***ESB83A and ESB83B only***	15A NCAC 2D .1109 *[CAA § 112(j)]*
hazardous air pollutants	Best Combustion Practices ***ESB83C only***	15A NCAC 2D .1111 *[MACT Subpart DDDDD]*
toxic air pollutants	**State Enforceable Only** See Section 2.2 C.1.	15A NCAC 2D .1100
toxic air pollutants	**State Enforceable Only** See Section 2.2 C. 2.	15A NCAC 2Q .0711

ESB83C was added to the permit revision no. T56. This boiler was added to Section 1 of the permit in revision no. T58, which included a complete regulatory review, because of the applicability of MACT 5D and 2D .1100 (State Enforceable Only air toxics regulations), although it otherwise qualified as an "insignificant activity because of size or production rate" pursuant to 15A NCAC 2Q .0503(8). That policy has since changed and "insignificant activities because of size or production rate" pursuant to 15A NCAC 2Q.0503(8) regardless of regulatory applicability (with the exception of PSD affected sources) do not need to be included on Section 1 of the permit.

For permitting consistency this source will be moved to the insignificant activities list.

ESB83A and ESB83B are larger boilers. A brief regulatory review is provided below.

15A NCAC 2D .0503: PARTICULATES FROM FUEL BURNING INDIRECT HEAT EXCHANGERS
15A NCAC 2D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES
15A NCAC 2D .0521: CONTROL OF VISIBLE EMISSIONS

These rules have not been revised since the initial TV permit. The existing permit conditions are consistent with current DAQ policy. No substantial changes will be made to the permit conditions addressing these regulations.

State Enforceable Only

15A NCAC 2D .1100 CONTROL OF TOXIC AIR POLLUTANTS

In the past few years the state enforceable only air toxics regulations 2Q .0700 and 2D .1100 have been revised dramatically with respect to combustion sources. Currently MACT affected sources (such as these boilers) are not subject to 2Q .0700 air toxics permitting procedures. However, the State of NC still has an obligation ensure that there is no "unacceptable risk" associated with the permitting and operation of sources exempted from the 2Q .0700 permitting procedures. These sources were included in the most recent dispersion modeling analysis conducted by the Permittee on September 6, 2012.

No changes will be made to existing permit condition 2.2.C.1.

State Enforceable Only
TOXIC AIR POLLUTANT EMISSIONS LIMITATION REQUIREMENT

This condition specifies TAPs for which a permit is required under 2Q .0700 if the facility-wide actual emissions of that TAP exceeds the listed Toxic Permit Emission Rates (TPERS).

As discussed above, in the past few years the state enforceable only air toxics regulations 2Q .0700 and 2D .1100 have been revised dramatically with respect to combustion sources. Currently MACT affected sources (such as these boilers) are not subject to 2Q .0700 air toxics permitting procedures However, the State of NC still has an obligation ensure that there is no "unacceptable risk" associated with the permitting and operation of sources exempted from the 2Q .0700 permitting procedures. Since the obligation is now on the State the requirements of this permit condition with respect to 2Q .0711 do not apply.

Applicability of this permit condition with respect to these sources will be removed.

15A NCAC 2D .1109: CAA § 112(j); Case-by-Case MACT for Boilers & Process Heaters

This rule applies to the boilers ESB83A and ESB83B. This requirements required under this rule were applied to the boilers in permit revision no. T50. The rule requires "best combustion practices" which are specified in the monitoring and recordkeeping conditions. The compliance date for this rule was April 27, 2013.

With the promulgation of 40 CFR 63 Subpart DDDDD (MACT 5D), "National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters," the applicability of the CAA §112(j) requirements will sunset and then the Permittee will have to comply with the CAA §112(d) standard, MACT 5D, pursuant to 40 CFR 63.56(b).

§63.56(b) requires (paraphrased):
- the permitting authority to incorporate requirements of that standard in the title V permit upon its next renewal
- establish a compliance date that assures the Permittee must comply with the promulgated standard within a reasonable time, but not longer than 8 years after the standard is promulgated or the Permittee was first required to comply with the case-by-case standard, whichever is less

Since this is the "next renewal" after the promulgation, the MACT 5D requirements will be incorporated into the revised permit. The MACT 5 D requirements will be discussed elsewhere in this review document.

The effective date of the MACT 5D was May 20, 2011 (76 FR 15662). The DAQ has interpreted the promulgation date under §63.56(b) to be the effective date of the rule. The Permittee was not required to comply with the case-by-case standard until April 27, 2013. Thus, the 8 years after date of promulgation is the appropriate date to choose for the MACT 5D compliance date. Consistent with §63.56(b), the Permittee will be required to comply with MACT 5D on May 20, 2019 (eight calendar years, including 2 leap years after May 20, 2011). As such the following language will be added to the permit:

"The Permittee shall comply with this CAA §112(j) standard until May 19, 2019. The initial compliance date for the applicable CAA §112(d) standard for ''National Emission Standards for Hazardous Air Pollutants for Industrial,

Commercial, and Institutional Boilers and Process Heaters" is May 20, 2019 as specified in condition X (placeholder) below."

Other than inclusion of the above sunset statement, the revised permit will contain no substantive changes to the existing requirements under 2D .1109. All changes will be detailed in the Table of Changes.

15A NCAC 2D .1111: MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY

As discussed above, starting on May 20, 2019, ESB83A and ESB83B will become subject to 40 CFR 63, Subpart DDDDD, "National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters" (MACT 5D).

Under MACT 5D the boilers can be considered "units designed to burn gas 1 fuels" pursuant to 40 CFR 63.7499(l) as defined in §63.7575 only if they burn No.2 fuel oil only during curtailment As such, the units will be subject to annual tune ups, a one-time energy assessment and associated recordkeeping and reporting. The initial tune ups and the one time energy assessment must be completed by the compliance date of May 20, 2019. See discussion above for this compliance date determination.

O. The following sources:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-1 through, ES-12, ES-14a, ES-14b, ES-14c, ES-15a, ES-15b, ES-15c, ES-17, through ES-21 **2D .1109 Case-by-Case MACT**	Twenty three natural gas-fired fiberglass drying ovens	NA	NA
ES-D1 through ES-D4	Four single lane dielectric fiberglass drying oven (1,800 pounds per hour throughput capacity, each)	NA	NA

The source descriptions will be revised as follows to include the maxim heat inputs based on the data included in application no. 10B. The ovens will appear in the revised permit as follows:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-1 through, ES-5, ES-7 through ES-11 ES-17 through ES-18	Twelve natural gas-fired fiberglass drying ovens (3.4 MMBtu/hr maximum heat input, each)	NA	NA
ES-6, ES-12 ES-19 through ES-21	Five natural gas-fired fiberglass drying ovens (1.5 MMBtu/hr maximum heat input, each)	NA	NA
ES-14a, ES-14b, ES-14c, ES-15a, ES-15b, ES-15c,	Six natural gas-fired fiberglass drying ovens (0.92 MMBtu/hr maximum heat input, each)	NA	NA
ES-D1 through ES-D4	Four single lane dielectric fiberglass drying oven (1,800 pounds per hour throughput capacity, each)	NA	NA

The drying ovens are used to cure the binder coat to the glass.
ES-14a, ES-14b, ES-14c, ES-15a, ES-15b, ES-15c, and ES-D1 were added to the permit in revision no. T49.
In permit revision no. T50, the permit was opened to apply 112j.
In permit revision no. T51, the regulatory applicability of the fiber glass drying ovens was corrected. Up until that time the devices have been characterized as direct fired ovens in the permit, whereas they should be considered indirect fired ovens.
ES-D1 was modified and ES-D2 was added to the permit in revision no. T53.
ES-D3 and –D4 were added to the permit in revision no. T57.

The following table provides a summary of limits and standards for the emission source(s) described above, as presented in the current permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E = 4.10P^{0.67}$ for $P \leq 30$ tons/hr $E = 55.0 P^{0.11} - 40$ for $P > 30$ tons/hr where E = allowable emission rate in pounds per hour P = process weight in tons per hour **Process stacks only**	15A NCAC 2D .0515
Particulate matter	0.324 lb/million Btu heat input each **Combustion stacks only**	15A NCAC 2D .0503
sulfur dioxide	2.3 lbs/million Btu each[1,2] **Combustion stacks only**	15A NCAC 2D .0516
visible emissions	40 percent opacity each for seventeen drying ovens[1] 20 percent opacity each for ten drying ovens[2,3]	15A NCAC 2D .0521
toxic air pollutants	**State Enforceable Only** See Section 2.2 C.1.	15A NCAC 2D .1100
toxic air pollutants	**State Enforceable Only** See Section 2.2 C. 2.	15A NCAC 2Q .0711
HAPs	Best Combustion Practices *See Section 2.2 D.* *Excluding dielectric fiberglass drying ovens (ID No. ES-D1 and ES-D2)*	15A NCAC 2D .1109 *[CAA § 112(j)]*

15A NCAC 2D .0515: PARTICULATES FROM MISCELLANEOUS INDUSTRIAL PROCESSES

In permit revision no. T51, the regulatory applicability of the fiber glass drying ovens was corrected. Up until that time the devices have been characterized as direct fired ovens in the permit, whereas they should be considered indirect fired ovens. As such the combustion emissions do not contact the process emissions, resulting from the drying of the binding agents applied to the fiber glass.

As a result, this rule applies only to the process stacks of the gas-fired drying ovens. The dielectric ovens burn no fuel and this rule applies to their process stacks as well.

The regulatory review for 2D .0515 that was conducted in T51 is still valid. That is, the PM emissions are expected to be low that no PM controls are necessary. The Permittee is simply required to keep records of process weight to calculate the allowable emissions.
No substantial changes to the existing permit condition is necessary.

15A NCAC 2D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES

This rule applies only to the combustion stacks of the natural gas-fired fiberglass drying ovens. Consistent with DAQ policy natural gas fired only sources do not require any M/R/R. No substantial changes to the existing permit condition are necessary.

15A NCAC 2D .0503: PARTICULATES FROM FUEL BURNING INDIRECT HEAT EXCHANGERS

This rule applies only to the combustion stacks of the natural gas-fired fiberglass drying ovens. Consistent with DAQ policy natural gas fired only sources do not require any M/R/R as the expected PM emissions are much lower than allowable by this rule. No substantial changes to the existing permit condition are necessary.

15A NCAC 2D .0521: CONTROL OF VISIBLE EMISSIONS

This rule limits opacity from both the process and combustion stacks to 40 percent when averaged over a six-minute period for the pre 1971 ovens and 20 % for the post 1971 ovens. Consistent with DAQ policy, no M/R/R is required

for the combustion stacks as they only combust natural gas and are not expected to emit visible emissions. Monthly observations are required for the process stacks.

No substantial changes to the existing permit condition are necessary.

15A NCAC 2D .1109: CAA § 112(j); Case-by-Case MACT for Boilers & Process Heaters

This rule applies to the natural gas-fired fiberglass drying ovens, all of which are indirect-fired heat exchangers. This requirements required under this rule were applied to the ovens in permit revision no. T50. The rule requires "best combustion practices" which are specified in in the monitoring and recordkeeping conditions. The compliance date for this rule was April 27, 2013.

With the promulgation of 40 CFR 63 Subpart DDDDD (MACT 5D), "National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters," the applicability of the CAA §112(j) requirements will sunset and then the Permittee will have to comply with the CAA §112(d) standard, MACT 5D, pursuant to 40 CFR 63.56(b).

§63.56(b) requires (paraphrased):
- the permitting authority to incorporate requirements of that standard in the title V permit upon its next renewal
- establish a compliance date that assures the Permittee must comply with the promulgated standard within a reasonable time, but not longer than 8 years after the standard is promulgated or the Permittee was first required to comply with the case-by-case standard, whichever is less

Since this is the "next renewal" after the promulgation, the MACT 5D requirements will be incorporated into the revised permit. The MACT 5 D requirements will be discussed elsewhere in this review document.

The effective date of the MACT 5D was May 20, 2011 (76 FR 15662). The DAQ has interpreted the promulgation date under §63.56(b) to be the effective date of the rule. The Permittee was not required to comply with the case-by-case standard until April 27, 2013. Thus, the 8 years after date of promulgation is the appropriate date to choose for the MACT 5D compliance date. Consistent with §63.56(b), the Permittee will be required to comply with MACT 5D on May 20, 2019 (eight calendar years, including 2 leap years after May 20, 2011). As such the following language will be added to the permit:

"The Permittee shall comply with this CAA §112(j) standard until May 19, 2019. The initial compliance date for the applicable CAA §112(d) standard for ''National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters" is May 20, 2019 as specified in condition X (placeholder) below."

Other than inclusion the above sunset statement, the revised permit will contain no substantive changes to the existing requirements under 2D .1109. All changes will be detailed in the Table of Changes.

15A NCAC 2D .1111: MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY

As discussed above, starting on May 20, 2019, these sources will become subject to 40 CFR 63, Subpart DDDDD, "National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters" (MACT 5D).

Under MACT 5D the ovens can be considered "units designed to burn gas 1 fuels" pursuant to 40 CFR 63. 7499(l) as defined in §63.7575. As such, the units (existing units less than 5 mmBtu/hr each) will be subject to 5-year tune ups, a one-time energy assessment and associated recordkeeping and reporting. The initial tune ups and the one time energy assessment must be completed by the compliance date of May 20, 2019. See discussion above for this compliance date determination.

15A NCAC 2D .1100: CONTROL OF TOXIC AIR POLLUTANTS

The current permit has a “60-day” reopening permit conditions for sources ES-D2 through ES-D4. All of these ovens (including ES-D2 through ES-D4) in this section were included in the most recent dispersion modeling analysis conducted by the Permittee on September 6, 2012. These conditions can be removed from the permit.

P. The following emergency engines:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ESDP366	Process Water (Return), Emergency Diesel fuel-fired Pump 524 (115 BHP)	NA	NA
ESDP89	Process Water (Supply) Emergency Diesel fuel-fired Pump 524 (325 BHP)	NA	NA
ESDP90	Process Water (Supply) Emergency Diesel fuel-fired Pump 525 (290 BHP)	NA	NA
ESDP91	Process Water (Return) Emergency Diesel fuel-fired Pump 525 (115 BHP)	NA	NA
ESDP92	Process Water GM Emergency Diesel fuel-fired Pump Loop 1&2 (Supply) (250 BHP)	NA	NA
ESDP93	Process Water (Supply) Emergency Diesel fuel-fired Pump 526 (173 BHP)	NA	NA
ESDP94	Process Water (Return) Emergency Diesel fuel-fired Pump 526 (125 BHP)	NA	NA
ES-FP1	Emergency Diesel fuel-fired Fire Pump (250 BHP)	NA	NA
ES-CAEB524	Emergency Natural Gas-fired Blower 524 (150 BHP)	NA	NA
ES-CAEB525	Emergency Natural Gas-fired Blower 525 (150 BHP)	NA	NA
ES-CAEB526	Emergency Natural Gas-fired Blower 526 (150 BHP)	NA	NA

The following table provides a summary of limits and standards for the emission source(s) described above, as presented in the current permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation
sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516
visible emissions	20 percent opacity	15A NCAC 2D .0521
toxic air pollutants	See Section 2.2 C.1. **State Enforceable Only** **(ESDP-89 through -94 and ESDP 366 only)**	15A NCAC 2D .1100
toxic air pollutants	See Section 2.2 C. 2. **State Enforceable Only** **(ESDP-89 through -94 and ESDP 366 only)**	15A NCAC 2Q .0711
hazardous air pollutants	Work practice and recordkeeping requirements.	15A NCAC 2D .1111 [40 CFR Part 63, Subpart ZZZZ]

Emission sources ESDP366 and ESDP89 through 94 were added to Section 1 of the Permit in revision no. T56. Emission sources ES-FP1, ESCAEB524, 525 and 526 were added to Section 1 of the Permit in revision no. T59. A full regulatory review was provided at the time they were added to Section 1 of the air permit and is still valid. All of these engines qualified as an "insignificant activity because of size or production rate" pursuant to 15A NCAC 2Q.0503(8) at that time. However, they were added to Section 1 of the permit as they were subject to MACT ZZZZ

and /or 2D .1100 (State Enforceable Only air toxics regulations). That policy has since changed and “insignificant activities because of size or production rate" pursuant to 15A NCAC 2Q. 0503(8), regardless of regulatory applicability (with the exception of PSD affected sources), do not need to be included on Section 1 of the permit. However, at the request of the Permittee, this sources will remain in Section 1 of the permit. No substantive changes will be made to the existing permit conditions.

Any implications with respect to 2D .1100 will be discussed elsewhere in this review document.

Q. The following sources:

Table 2.1.Q

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
	**Raw material batch house bins identified as follows:		
EPDC160	Blender A	DC160	Cartridge-type filter
EPDC161	Blender B	DC161	Cartridge-type filter
EPDC162	Silo 17	DC162	Cartridge-type filter
EPDC163	Scale Bin 1	DC163	Cartridge-type filter
EPDC164	Scale Bin 2	DC164	Cartridge-type filter
EPDC165	Scale Bin 3	DC165	Cartridge-type filter
EPDC166	Scale Bin 4A	DC166	Cartridge-type filter
EPDC167	Scale Bin 4B	DC167	Cartridge-type filter
EPDC168	Scale Bin 5	DC168	Cartridge-type filter
EPDC169	Scale Bin 6	DC169	Cartridge-type filter
EPDC170	Scale Bin 7	DC170	Cartridge-type filter
EPDC171	Scale Bin 8	DC171	Cartridge-type filter
EPDC172	Bag Breaker 1	DC172	Cartridge-type filter
EPDC173	Bag Breaker 2	DC173	Cartridge-type filter
EPDC174	Bag Breaker 3	DC174	Cartridge-type filter
EPDC175	Silo 20	DC175	Cartridge-type filter
EPDC176	Scale Bin 11	DC176	Cartridge-type filter
EPDC177	MBSB 1	DC177	Cartridge-type filter
EPDC178	MBSB 2	DC178	Cartridge-type filter
EPDC179	MBSB 3	DC179	Cartridge-type filter
EPDC180	MSBS 6	DC180	Cartridge-type filter
EPDC181	MBSB7	DC181	Cartridge-type filter
EPDC184	Raw Material Batch Bin MBSB5(755 cubic feet storage capacity)	DC184	Cartridge filter (1470 square feet of filter area)
EPDC185	Raw Material Batch Bin MBSB8 (755 cubic feet storage capacity)	DC185	Cartridge filter (1,470 square feet of filter area)
EPDC186	Raw Material Batch Bin MBSB9 (776 cubic feet storage capacity)	DC186	Cartridge filter (1,470 square feet of filter area)
EPDC187	Raw Material Batch Bin MBSB10 (776cubic feet storage capacity)	DC187	Cartridge filter (1,470 square feet of filter area)

These sources are simple PM emission sources controlled with cartridge filters. They emit no VOC/HAPs/TAPs.

EPDC184 was added to permit no. T51. A thorough regulatory review was conducted at that time that is still applicable. No substantial changes need to be made to the existing permit.

EPDC185 through 187 were added to permit no. T52. A thorough regulatory review was conducted at that time that is still applicable. No substantial changes need to be made to the existing permit.

The following table provides a summary of limits and standards for the emission source(s) described above, as presented in the current permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E = 4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	20 percent opacity	15A NCAC 2D .0521(d)

All other sources included in Table 2.1.Q. are similar to EPDC 184 through 187. Thus, the current permit language for the applicable regulations is still valid. No further review for these sources is necessary. Compliance Assurance Monitoring (CAM) will be discussed elsewhere in this review document.

R. The following sources:

Table 2.1.R.

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ESWC367a	Remote Wet Cut Line No. 1 (3,500 lbs/hr dry nominal production rate) including a natural gas-fired dryer (3.5 MMBtu/hr maximum heat input rate)	CDWC367	Venturi scrubber (80 gallons per minute minimum liquid injection rate)
ESWC368a	Remote Wet Cut Line No. 2 (3,500 lbs/hr dry nominal production rate) including a natural gas-fired dryer (3.5 MMBtu/hr maximum heat input rate)	CDWC368	Venturi scrubber (80 gallons per minute minimum liquid injection rate)
ESWC369a	Remote Wet Cut Line No. 3 (3,500 lbs/hr dry nominal production rate) including a natural gas-fired dryer (3.5 MMBtu/hr maximum heat input rate)	CDWC369	Venturi scrubber (80 gallons per minute minimum liquid injection rate)
ESWCL370	Remote Wet Cut Line No. 4 (3,000 lbs/hr dry nominal production rate) including a natural gas-fired dryer (3.5 MMBtu/hr maximum heat input rate)	CDWC370	Venturi scrubber (80 gallons per minute minimum liquid injection rate each)
ESWCL371	Remote Wet Cut Line No. 5 (3,000 lbs/hr dry nominal production rate) including a natural gas-fired dryer (3.5 MMBtu/hr maximum heat input rate)	CDWC371	Venturi scrubber (80 gallons per minute minimum liquid injection rate each)
ESWCL372	Remote Wet Cut Line No. 6 (3,500 lbs/hr dry nominal production rate) including a natural gas-fired dryer (3.5 MMBtu/hr maximum heat input rate)	CDWC372	Venturi scrubber (80 gallons per minute minimum liquid injection rate)

Table 2.1.R.-A
Existing Source Configuration

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ESWCL367	Remote wet cut line No. 1 (5,100 lbs/hr dry nominal production rate)	CDWC367a	Venturi scrubber (48 gallons per minute minimum liquid injection rate)
ESWC367	Wetcut natural gas-fired fiberglass dryer (5,100 lbs/hr dry nominal production rate, 2.5 million Btu/hr nominal heat input rate)	EPWC367	Sly wet scrubber system (65 gallon per minute liquid injection rate)
ESWCL368	Remote wet cut line No. 2 (5,100 lbs/hr dry nominal production rate)	CDWC368a	Venturi scrubber (48 gallons per minute minimum liquid injection rate)

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ESWC368	Wetcut natural gas-fired fiberglass dryer (5,100 lbs/hr dry nominal production rate, 2.5 million Btu/hr nominal heat input rate)	EPWC368	Sly wet scrubber system (65 gallon per minute liquid injection rate)
ESWCL369	Remote wet cut line No. 3 (5,100 lbs/hr dry nominal production rate)	CDWC369a	Venturi scrubber (48 gallons per minute minimum liquid injection rate)
ESWC369	Wetcut natural gas-fired fiberglass dryer (5,100 lbs/hr dry nominal production rate, 2.5 million Btu/hr nominal heat input rate)	EPWC369	Sly wet scrubber system (65 gallon per minute liquid injection rate)

The following table provides a summary of limits and standards for the emission source(s) described above, as presented in the current permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E = 4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 pounds per million Btu heat input each	15A NCAC 2D .0516
visible emissions	20 percent opacity	15A NCAC 2D .0521
toxic air pollutants	See Section 2.2 C.1. **State Enforceable Only**	15A NCAC 2D .1100
toxic air pollutants	See Section 2.2 C. 2. **State Enforceable Only**	15A NCAC 2Q .0711

Remote wet cut (RWC) lines 1 through 3 were modified in permit revision no. T58. RWC lines 4 through 6 were also added in permit no. T58. A thorough regulatory review was conducted at that time that is still applicable. No substantial changes need to be made to the existing permit.

Based on the most recent inspection report dated April 28, 2015:

The permittee has removed all the existing equipment (listed in Table 2.1.R-A above). All the equipment listed in Table 2.1.R is in place and operational with the exception of Line 6 (ESWCL372).

Therefore the permit can be modified to remove the operating scenario associated with Table 2.1.R.-A.

S. The following sources:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
EPDC182	Batch House Central Vacuum System	DC182	Cartridge-type filter (1,860 square feet of filter area)
EPDC183	Batch House Scale Area Vacuum System	DC183	Cartridge-type filter (18,288 square feet of filter area)

These sources were added to Section 1 of the permit in revision no. T48 with a full regulatory discussion that is still applicable at this time. These are PM emitting sources only. Given the similarity in emissions and regulatory requirements, these sources will be consolidated into Section Q of the air permit.

T. The following emergency engine:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ESDP93	Process Water (Supply) Emergency Diesel fuel-fired Pump 526 (173 BHP)	NA	NA

The following table provides a summary of limits and standards for the emission source(s) described above, as presented in the current permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation
toxic air pollutants	**State Enforceable Only** See Section 2.2 C.1.	15A NCAC 2D .1100
toxic air pollutants	**State Enforceable Only** See Section 2.2 C.2.	15A NCAC 2Q .0711
hazardous air pollutants	Work practice and recordkeeping requirements.	15A NCAC 2D .1111 [40 CFR Part 63, Subpart ZZZZ]
Various	See Condition 2.1.T.1.	15A NCAC 2D .0524 [40 CFR 60, NSPS Subpart IIII]

This engine was added to Section 1 of the permit in revision no. T58, which included a complete regulatory review, because of the applicability of MACT 4Z and 2D .1100 (State Enforceable Only air toxics regulations), although it otherwise qualified as an "insignificant activity because of size or production rate" pursuant to 15A NCAC 2Q.0503(8). The controlling pollutant is NOx, with a PTE of 1.34 tpy based on a maximum utilization of 500 hours per year. That policy has since changed and “insignificant activities because of size or production rate" pursuant to 15A NCAC 2Q.0503(8) regardless of regulatory applicability (with the exception of PSD affected sources) do not need to be included on Section 1 of the permit.

For permitting consistency this source will be moved to the insignificant activities list.

U. The following source:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ESVAP1 **MACT Subpart DDDDD**	Propane-fired propane vaporizer (4.2 million Btu/hr heat input rate)	NA	NA

The following table provides a summary of limits and standards for the emission source(s) described above, as presented in the current permit:

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulates	0.324 pound per million Btu heat input	15A NCAC 2D .0503
sulfur dioxide	2.3 lbs/million Btu heat input	15A NCAC 2D .0516
visible emissions	20 percent opacity	15A NCAC 2D .0521
hazardous air pollutants	Best Combustion Practices - 5 year tune up, initial energy assessment	15A NCAC 2D .1111 *[MACT Subpart DDDDD]*

This source was added to the permit in revision no. T60 which included a complete regulatory review. It was an existing source (prior to 2005) but was added to Section 1 the permit because of the applicability of MACT 5D, although it otherwise qualified as an "insignificant activity because of size or production rate" pursuant to 15A NCAC 2Q.0503(8). That policy has since changed and “insignificant activities because of size or production rate" pursuant to 15A NCAC 2Q.0503(8) regardless of regulatory applicability (with the exception of PSD affected sources) do not need to be included on Section 1 of the permit. However, at the request of the Permittee, this sources will remain in Section 1 of the permit. No substantive changes will be made to the existing permit conditions.

IV. Facility-wide Regulatory Considerations

State-Enforceable Only
Permit conditions to address the fluoride and filterable PM emission limitations established by Special Order of Consent 2002-002.

PPG and the Environmental Management Commission (EMC), an agency of the state of North Carolina entered into a Special Order of Consent (SOC) to address alleged violations of PSD (2D .0530), NSPS (2D .0524), and state air toxics regulations (2D .1100). The SOC encompassed both this facility and the Lexington facility (which is beyond the scope of the discussion here).

Pursuant to the SOC, the Permittee is required to meet the following through the use of either an emissions control system or the use of a modified material feed known as "environmentally friendly batch and meeting the following limits:

- Fluorides - 0.45lb/ton (annual average) of glass pulled
- The numerical emission limits for PM in 40 CFR Subpart CC (0.5 g/kg modified process or 0.25 g/kg using controls).

The PM emission limitation was discussed in Section III. above on a source-by-source basis.

With respect to fluorides (F), the limitation and monitoring required to show compliance has not been incorporated into the air permit properly to date. The affected furnaces do not utilize control devices, but use the environmentally friendly batch (EFB). EFB is a modified raw material feed to the furnaces which is simply just batch recipes that utilize materials with relatively low fluoride content. In the past, F was a significant part of the glass recipe. It was generally incorporated into the recipe in the form of fluorspar, which has an F content in the 10% to 50% range, The F content is no longer specified for current glass recipes. However, F is found at ppm levels. Note that the emission limitation of 0.45 lb/ton of batch material is equivalent to 225 ppm, mass basis.

The Permittee occasionally has samples of glass produced analyzed by x-ray fluorescence (XRF) by an outside laboratory but level of detection of this method is only 0.1% by weight, which is equivalent to 1000 ppm or 2 lb/ton. The Permittee has stated that since the use of EFB, there have been no glass samples that had F levels above the level of detection.

The furnace 524 melter stack was tested in 2003 with a F content of the batch material of 0.39 lb/ton (equivalent to 0.5 lb/ton of glass pulled) and F melter stack emissions of 0.123 lb/ton of glass pulled. Note this source test was over 12 years ago. At that time it appeared that approximately of 25% of the F content of the batch material was emitted. It is understood that the batch material analysis and source test determination of F are two distinct methodologies however, for parametric monitoring purposes such a comparison has value.

The Permittee has claimed compliance with the emission limitation by assuming 100% of the batch material F mass is emitted out the melter stack. Note, however, the Permittee has had no permit obligation to do so since the original source test required by the SOC.

To establish a reasonable monitoring plan that will ensure compliance with the F limit of 0.45 lb/ton of glass pulled on an annual average basis moving forward, the Permittee will, upon issuance of the renewed air permit, conduct a source test for F and a concurrent analysis of the batch materials. A batch material F content will be correlated at that time to the emission limitation of 0.45 lb/ton of glass pulled, based on the results of the source testing. A linear relationship between the batch material F content and the results of the source test will be assumed. This parametric indicator will be used to assess compliance with the emission limitation. Given the likelihood of the margin of compliance being relatively large, F not being a specified component of the recipe and hence being at the impurity level, only an annual analysis will be required. However, this analysis will be used as the basis to estimate the F content for each batch formulation used. The F content for each differing batch will be determined and a rolling 12-month average will be determined for each furnace melter. Typical semiannual summary reporting will also be required.

15A NCAC 2D .0958: WORK PRACTICES FOR SOURCES OF VOLATILE ORGANIC COMPOUNDS
This standard applies to all operations facility-wide, not just to the sources indicated as the following:

One cartridge filter (3,048 square feet of filter area, ID No. 97EC) installed on one binder mix room ventilation (ID No. ES97) ; and
One packed cross flow scrubber (34 gallons per minute minimum scrubbing liquid injection rate, ID No. CDWS96) installed on one caustic brush cleaning system (ID No. ESCC96)

The permit will be revised accordingly. The most recent inspection reports states that the Permittee is in compliance with all the requirements of this permit condition. No substantial changes will be made to the existing permit condition.

State Enforceable Only
15A NCAC 2D .1100: CONTROL OF TOXIC AIR POLLUTANTS

The Permittee had supplied a facility-wide modeling demonstration that was approved by the DAQ on September 6, 2012. Each permit application since that time addressed the implication of whether or not a revised analysis was required. It was determined that a revised demonstration was not required. The applicability of this regulation is addressed as necessary for each emission source in section III of this review document.

No changes are necessary to the existing permit condition.

State Enforceable Only
15A NCAC 2D .1806: CONTROL AND PROHIBITION OF ODOROUS
This regulation applies facility-wide. To date, the facility has not had a problem with this regulation. No changes will made to the existing permit condition.

15A NCAC 2D .0614: COMPLIANCE ASSURANCE MONTIORING (CAM)
40 CFR 64 requires that a continuous assurance monitoring plan be developed for all equipment located at a major facility that have pre-controlled emissions above the major source threshold, and use a control device to meet an applicable standard.

The Permittee supplied a thorough analysis in the permit application. All the sources use that a control device to meet an applicable standard have pre-controlled emissions less than the major source threshold of 100 tpy. Thus CAM does not apply to any of the sources at the facility.

NESHAPs or MACTs not already addressed

The facility is a major source of HAP. As such, it is not subject to SUBPART SSSSSS—"National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources."

The facility is also not subject to any of the following based on the applicability requirements of each rule:

40 CFR 61 Subpart N National Emission Standard for Inorganic Arsenic Emissions from Glass Manufacturing Plants;

40 CFR 63 Subpart NNN "National Emission Standards for Wool Fiberglass Manufacturing"; or

40 CFR 63 Subpart HHHH "National Emission Standards for Wet-Formed Fiberglass Mat Production"

V. Table of Changes

Condition No. Existing	Condition No. New	Changes*
Cover letter	Same	• Revised dates, permit numbers, etc.
Insignificant Activities	Same	• Removed and modified numerous sources at the request of the Permittee

List		
Permit, page 1	Same	• Revised dates, permit numbers, etc.
Equipment List	Same	• Using Furnace No. 526 as a model since it was the furnace most recently modified, revised the equipment descriptors of furnaces 520, 524 and 525 to be consistent with Furnace No. 526. No changes in permitted capacity or fuels were made. • Removed all minor modification and 502(b)(10) change footnotes. Once the renewal is issued the minor modifications referenced in these footnotes will be covered by the permit shield pursuant to 15A NCAC 2Q .0512. • Reordered equipment to facilitate readability • Added heat input values to equipment descriptors for drying ovens addressed in Section 2.1.Q based on application no. 10B • Removed the small boiler (ESB83C) • Removed sources address in Section 2.1.P • Removed sources addressed in Section 2.1.T • Removed sources addressed in Section 2.1.U • Removed reference to No.2 fuel oil –firing on furnaces 520, 525 and 526 •
Global	Same	▪ Removed reference to specific equipment ID numbers in various permit conditions when it was clear and unambiguous by context which equipment was being addressed. ▪ Revised references to Section 2.2. conditions as necessary to account for the removal of the existing condition 2.2.A.
Global	Same	▪ In all "standard" testing conditions, the language was simplified to read: **<u>Testing</u>** [15A NCAC 2Q .0508(f)] X. If emissions testing is required, the testing shall be performed in accordance with General Condition JJ. If the results of this test are above the limit given in Section XYZ above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .XYZ. General Condition JJ addresses all the testing requirements pursuant to 15A NCAC 2D .2600.
Global	Same	▪ In context of particulate matter (PM/PM10/PM2.5) removed any mention of "filterable and condensable" for permit clarity and consistency. In general, (with a few exceptions, .e.g. NSPS Subpart CC), particulate matter consists of both the filterable and condensable fraction. When there is an exception to this, mention will be made to "filterable only" or "condensable only"
2.1.C.		**Furnace No. 520**
		• Revised equipment descriptor to be consistent with permitted equipment list
2.1.C Applicable regulations table		• Removed reference to PSD avoidance limit for fluorides • Added reference to the state enforceable only fluoride emission limitations required pursuant to the SOC 2002-002.
2.1.C.1	Same	• Substantially revised the 2D .0515 permit condition to read substantially the same as the 2D .0515 condition for Furnace no. 526. The rationale is explained in the permit review document. Changes include: • Inclusion of an annual or 5-year testing requirement depending on margin of compliance. • Removal of the process rate multiplier of 0.776.
2.1.C.3	Same	2D .0521 condition

a.	Same	• Removed the following language as it does not apply: *melter while operating in accordance with 40 CFR 60.292*
b.	Same	• Revised regulatory reference • Removed reference to 2D .2601. The reference to General Condition JJ is sufficient.
c.	Same	• Removed "establish normal by January 10, 2005". The Permittee has met this requirement.
d.	NA	• Removed COMS requirement for melter operating scenario as it does not apply
e.	d.	• Simple renumbering
f.	e.	• Simple renumbering
2.1.C.4	Same	2D .05030 PSD Condition • A regulatory reference to 15A NCAQC 2Q .0317 Avoidance Conditions was added to clarify that these limits are to avoid triggering PSD.
a.	Same	• Removed reference to fluoride limitation
c	same	• Added monthly recordkeeping requirements
NA	d	• Added semi-annual reporting requirements
NA	5	• A NSPS Subpart CC condition specifically for 520 was added to the permit. The requirements were previously located in Section 2.2.
NA	6	• Added a 2D .0521 condition to address the melter only. The melter has unique requirements under this rule (see 2D .0521(g)) that were not explicit in the existing 2D .0521 condition.
2.1.D.	**Same**	**Furnace 524**
		• Revised equipment descriptor to be consistent with permitted equipment list
Applicable regulations table		• Removed reference to PSD avoidance limit for fluorides • Added reference to the state enforceable only fluoride emission limitations required pursuant to the SOC 2002-002. •
1	Same	• Substantially revised the 2D .0515 permit condition to read substantially the same as the 2D .0515 condition for Furnace no. 526. The rationale is explained in the permit review document. Changes include: • Removal of the existing testing condition c. as a result of the modifications in application No. 11D. This testing requirement was satisfied on August 23, 2012. • Removal of the process rate multiplier of 0.776.
3	Same	• Revised the 2D .0521 condition to just address the refiner and forehearth. The applicability of 2D .0521 to the melter will be addressed in a separate condition. No substantive changes to requirements for the refiner and forehearth were made.
NA	4	• Added a 2D .0521 condition to address the melter only. The melter has unique requirements under this rule (see 2D .0521(g)) that were not explicit in the existing 2D .0521 condition.
4	5	2D .0530 condition
		Added regulatory reference of 2Q .0317 as it is a PSD avoidance condition
a	Same	• Removed reference to fluoride limitation
c. through f.	c.	• Simplified monitoring and recordkeeping requirements by removing redundant language.
g.	d.	• Simple renumbering • Reduce reporting from quarterly to semiannually. The emissions must now

		be calculated for each of the 12-month periods over the previous 17 months instead of the previous 14 months.
5.	NA	• The PM.2.5 testing requirement has been removed. The stack testing was completed August 23, 2012. The stack test results were approved by the SSCB on January 15, 2013. The PM2.5 emissions from the stack test were lower than the emission factor used in the Air Permit application 2300153.11D
NA	6	• An NSPS Subpart CC condition specifically for 524 was added to the permit. The requirements were previously located in Section 2.2.
2.1.E.	**Same**	**Furnace 525**
Permitted source(s) description	same	• Using furnace no. 526 as a model since it was the furnace most recently modified, revised the equipment descriptors of furnace no. 525 to be consistent with Furnace No. 526. No changes in permitted capacity were made. The permitted ability to fire No.2 fuel oil was removed. The descriptors are consistent with the permitted equipment list.
Applicable regulations table	same	• Added reference to the state enforceable only fluoride and filterable PM emission limitations required pursuant to the SOC 2002-002. • Removed reference to PSD avoidance limit for fluorides
1.	Same	2D .0515 condition
a.	Same	• Removed the following sentence: *For the purpose of compliance with 15A NCAC 2D .0515, the process rate is the pull rate divided by 0.776.*
c.	Same	• Revised the testing condition to be independent of the other furnaces. Testing will be every one or five years depending on margin of compliance.
d.	e.	• The existing monitoring and recordkeeping condition was renumbered • The recordkeeping requirements were revised to include records associated with the one year/five year source tests.
e.	f.	• The reporting condition was renumbered.
NA	d.	• A condition was added that specifically addresses the contributions of PM from the refiner and forehearth.
2.	Same	2D .0516 condition
NA	NA	• No substantive changes other than removing the ability to fire No. 2 fuel oil.
3.	Same	2D .0521 condition
c.	Same	• Removed the following language: *The Permittee shall establish "normal" for the source in the first 30 days following the date the furnace reaches the steady state condition* • Added the following language to be consistent with standard permit condition requirements: *The weekly observation must be made for each week of the calendar year period to ensure compliance with this requirement*
4., 2.2.D.1.	Same	2D .0524 condition
		• This condition was replaced with a State Enforceable Only requirement that addresses the requirements imposed by SOC2002-002. The condition contains the 1 lb/ton filterable PM and 0.45 lb/ton fluoride emission limitations. Condition requires monitoring to determine compliance with the fluoride emission limitation. See permit review for rationale behind this change.

5.	Same	2D .0530 condition
		Added regulatory reference of 2Q .0317 as it is a PSD avoidance condition
a	Same	• Removed reference to fluoride limitation
b.	Same	• Removed fuel oil testing requirement; replaced it with standard DAQ testing requirement
c. through. g.	c.	• Simplified monitoring and recordkeeping requirements by removing redundant language. • Removed the following language: No monitoring/recordkeeping is required when burning natural gas/propane in the furnace 525. This requirement will now apply for all fuels combusted.
h.	NA	• This fuel oil monitoring requirement was removed.
i.	e.	• Simple renumbering • Reduce reporting from quarterly to semiannually. The emissions must now be calculated for each of the 12-month periods over the previous 17 months instead of the previous 14 months.
2.1.F.	**Same**	**Furnace No. 526**
		• Revised equipment descriptor to be consistent with permitted equipment list • Removed reference to No.2 fuel oil at the request of the Permittee. The Permittee will no longer be permitted to fire No. 2 fuel oil in this furnace.
2.1.F. applicable regulations table	Same	• Added reference to the state enforceable only fluoride emission limitations required pursuant to the SOC 2002-002.
1.	same	2D.0515 condition
c.	NA	• Removed initial testing condition as it has been satisfied.
d.	c.	• Reformatted condition; no substantial changes • Corrected typographical error (ES-507-M to 526M) • Simple renumbering
3	Same	2D .0521 condition
		• Added refiner and forehearth indicator for clarity purposes
c.	same	• Added the following language: The weekly observation must be made for each week of the calendar year period to ensure compliance with this requirement
NA	4.	• 2D .0521 condition for melter • A revised applicability analysis shows that NSPS Subpart CC is not an opacity standard, thus 2D .0521 applies and a condition was added to the permit to address the melter. A separate condition was added since it has substantially different requirements than the refiner and forehearth.
4.	NA.	• 2D .0530 condition • This condition was removed since the use of EFB and the inability to fire No.2 fuel oil will result in the sources' PTE to be well under the PSD avoidance limits contained in this condition.
5.	Same	2D .0530(u) condition
c.	NA	• Removed initial testing requirement required by application no. 14A. This testing has been satisfied. The condition also required a permit application to be submitted based on the results of this testing. This permit application was received on September 22, 2015. Condition d. below was revised accordingly.
NA	d	• Consistent with 2D .0530(u) conditions in other DAQ permits, a table of the projected actual emissions were added. The Permittee will note in the

		annual reports why the actual emissions exceeded the projected emissions (if necessary) • Based on the permit application received September 22, 2015, the projected actual emissions of NOx was revised from78.70 to 98.11 tpy.
2.2.A.1	6.	• An NSPS Subpart CC condition specifically for 526 was added to the permit. The requirements were previously located in Section 2.2.
2.1.G.	**Same**	**Storage Bins**
		• Arranged the listing of affected sources into tables to facilitate the regulatory applicability of permit condition 2.1.G.3., which addresses PSD avoidance.
2	same	• 2D .0521 condition
c.	Same	• Removed establish normal for ESDC 127 and 134 language; this requirement has been satisfied. • Added the following language: The monthly observation must be made for each month of the calendar year period to ensure compliance with this requirement
3.	Same	2Q .0317 for 2D .0530 (PSD avoidance)
a.	same	Revised condition to reference the tables of affected sources instead of listing all the affected sources
4.	NA	• Removed notification requirement as this requirement has been satisfied.
5.	NA	• Removed notification requirement as this requirement has been satisfied.
2.1.H.	**NA**	**PSD affected storage bins**
		• Revised equipment descriptors to be consistent with permitted equipment list
2	same	• 2D .0521 condition
c.	same	• Removed establish normal for ESDC121 language; this requirement has been satisfied. • Added the following language: The monthly observation must be made for each month of the calendar year period to ensure compliance with this requirement
2.1.I.	**Same**	**Four natural gas-fired in line dryers for furnace 526**
		• Added the heat input rates into the equipment descriptors
4	NA	• This notification requirement has been removed as it has been satisfied.
2.1.K.	**Same**	**one binder mix area room ventilation**
		•
2.1.M.	**Same**	**Four emergency engines**
		•
Applicable regulations table	Same	• Removed reference to 2Q .0711
2.	Same	• The 2D .0521 condition was substantially revised to include no monitoring, recordkeeping or reporting requirements consistent with current DAQ policy.
3	Same	• Added regulatory reference of 2Q .0317 as it is a PSD avoidance condition
c.	Same	• Removed the following language as it is redundant with General Condition O: The Permittee shall keep each monthly record on file for a minimum of three years
d.	same	• Reduced reporting to semiannually. Reporting was clarified to include monthly and total hours of operation of each generator and the monthly and total emissions of nitrogen oxides.
2.1.N	**Same**	**Two 25.1 million Btu per hour boilers and one 0.84 million Btu per hour**

		boiler
Applicable regulations table	Same	• Added reference to the applicability of 2D .1111 beginning May 20, 2019 for ESB83A and ESB83B • Removed reference to 2Q .0711
2.1.N.5.	Same	• Added MACT 5D condition to address the future requirements for ESB83A and ESB83B
2.1.O.	**Same**	**Natural gas-fired drying ovens and dielectric drying ovens**
		• Added heat input values to equipment descriptors based on application no. 10B
Applicable regulations table	Same	• Added reference to the applicability of 2D .1111 beginning May 20, 2019 • Clarified the applicability of 112(j) and MACT 5D is not for the dielectric ovens (ES-D1 through D4) • Removed orphaned footnotes from applicable regulations table
3.d.	Same	• Removed "establish normal" for ES-D3 and –D4 language; this requirement has been satisfied. • Added the following language: *The monthly observation must be made for each month of the calendar year period to ensure compliance with this requirement*
5, 6	NA	• These 2D .1100 reopen for cause conditions were removed as these sources were included in the last modeling demonstration on September 6, 2012.
NA	5	▪ Added a new 2D .1111 (MACT 5D) condition for the all-natural gas-fired ovens (combustion stacks). The compliance date for MACT 5D is May 20, 2019. The Permittee must satisfy the one time energy assessment and initial tune up requirement by the compliance date of May 20, 2019.
2.1.P.	**RESERVED**	**emergency engines and fire pumps**
		• Under current DAQ policy all sources qualifying as "insignificant activity because of size or production rate" pursuant to 15A NCAC 2Q.0503(8) do not need to be permitted explicitly in section 2.1 of the permit. However, at the request of the Permittee the conditions were left in the permit. No substantive changes were made to the permit conditions.
2.1.Q.	**Same**	**Raw Material Batch Bins and other PM emitting sources**
Table 2.1.Q	Same	• The vacuum systems in the existing section 2.1.S of the permit were consolidated into this Section.
2.c.	Same	• Removed the following language as it has been satisfied: *The Permittee shall establish normal for the source in the first 30 days following the effective date of the permit.*
3.	NA	This notification requirement was removed as it was satisfied in March 2007.
4	NA	This notification requirement was removed as it was satisfied in November 2010 and February 2011/.
2.1.R.	**Same**	**Remote wet cut lines no. 1 through 6**
		• Removed Table 2.1.R.-A, Existing Source Configuration as these sources have been removed •
1.b.	Same	• Removed reference to Table 2.1R-A
4.	NA	• The notification requirement was removed as it has been satisfied.
2.1.S.	2.1.Q	• Given the similarity in emissions and regulatory applicability of these cartridge filter controlled vacuum systems to the sources in Section Q, these sources were consolidated into Section Q.
2.1.T.	2.1.S	• Under current DAQ policy all sources qualifying as "insignificant activity because of size or production rate" pursuant to 15A NCAC 2Q.0503(8) do not

		need to be permitted explicitly in section 2.1 of the permit. However, at the request of the Permittee the conditions for ID No. ESDP93 were left in the permit. No substantive changes were made to the permit conditions.
2.1.U.	2.1.T.	• Under current DAQ policy all sources qualifying as "insignificant activity because of size or production rate" pursuant to 15A NCAC 2Q.0503(8) do not need to be permitted explicitly in section 2.1 of the permit. However, at the request of the Permittee the conditions for ID No. ESVAP1 were left in the permit. No substantive changes were made to the permit conditions.
2.2.A.1.	NA	• The NSPS Subpart CC condition was removed. The requirements for each furnace subject to NSPS Subpart CC are included in specific conditions in Section 2.1.
2.2.D.1	**2.2.A.1.**	**CAA 112(j) affected sources**
NA	1a.i	• The following language was added to this permit condition: "The Permittee shall comply with this CAA §112(j) standard until May 19, 2019. The initial compliance date for the applicable CAA §112(d) standard for ''National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters" is May 20, 2019, as specified in condition X below'.
2.2.D.1.	NA	• Added the state enforceable only fluoride emission limitations for the furnace melters required pursuant to the SOC 2002-002, including testing and associated M/R/R.

VI. Compliance Considerations

The facility was last inspected by Joe Foutz on April 28, 2015. The facility has had no violations in the past five years.

VII. Public Notice/EPA and Affected State(s) Review

(See chronology in Section II for actual dates)
A notice of the DRAFT Title V Permit will be made pursuant to 15A NCAC 2Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Copies of the public notice will be sent (via email) to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 2Q .0522, a copy of each permit application, each proposed permit (via email) and each final permit shall be provided to EPA. Also pursuant to 2Q .0522, a notice of the DRAFT Title V Permit will be provided (via email) to each affected State at or before the time notice provided to the public under 2Q .0521 above. Pursuant to 15A NCAC 2Q .0518, the DAQ will not issue the final permit until EPA's 45-day review period has expired or until EPA has notified the Director that EPA will not object to issuance of the permit revision, whichever occurs first.

VIII. Conclusions, Comments, and Recommendations

~~*TBD*~~